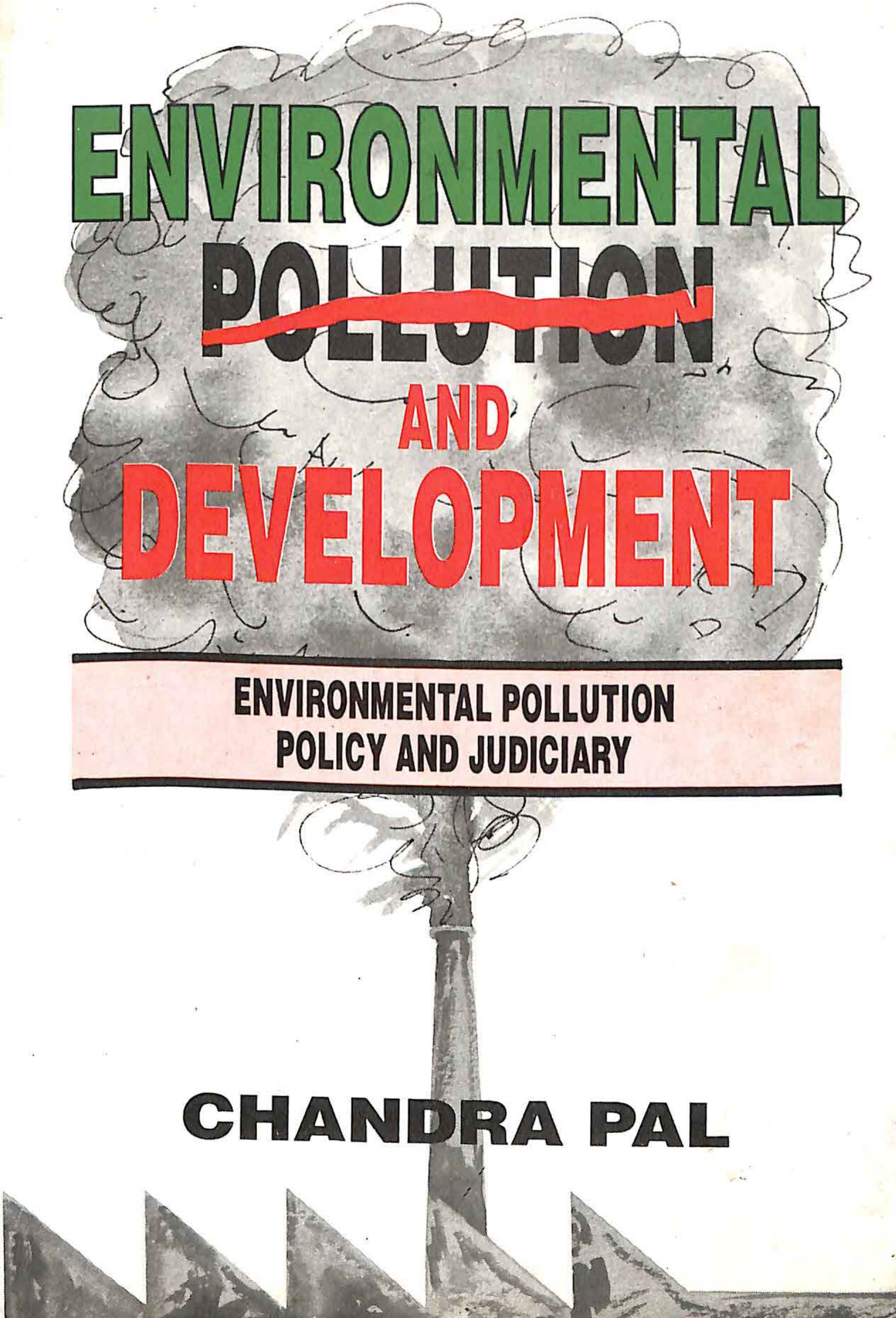

ENVIRONMENTAL ~~POLLUTION~~ AND DEVELOPMENT

ENVIRONMENTAL POLLUTION POLICY AND JUDICIARY

CHANDRA PAL

Prior to the United Nations Conference on the Human Environment (UNCHE) convened in Stockholm in 1972, environment protection was considered a constraint to development and today, it has largely given way to better understanding of the linkages between development and environment. The UN conference on "Environment and Development" (UNCED) held in 1992 at Rio indicate that development policy makers have come to realise that degradation of the environment and depletion of valuable natural resources not only impede economic development but threaten human survival. International Environmental Laws occupy the centre-stage among all efforts towards global environmental protection and conservation.

India, being a developing country, has been concerned about environmental issues such as land degradation, water pollution, air pollution, noise pollution and desertification, which together cause deterioration of the environment. In this book, national laws occupy the centre-stage among all efforts to control environmental pollution and environment protection. Indian Judiciary has also played an effective role to protect environment. This book covers the course of Environmental Law for LL.B. and LL.M. Classes.

Contents include: Jurisprudence of International and National Environmental Law; Environmental Policy and Peoples' Participation in Environmental Protection; Control of water pollution: Law and Practice; Control of Air Pollution: Law and practice; Control of Noise Pollution: Need for a Comprehensive Law; Control of Land Pollution and Preservation of Ecological Balance; Environmental Protection and Recent Environment Law; Conclusions, Suggestions and Probable Future Trends.

This book will be found useful by students, teachers, researchers, policy framers, Jurists and to all those interested in environment protection.

Rs. 995

ENVIRONMENTAL POLLUTION AND DEVELOPMENT

ENVIRONMENTAL LAW, POLICY AND ROLE OF JUDICIARY

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He is author of two prominent books: '*Centre — State Relations and Cooperative Federalism*' and '*State Autonomy in Indian Federation*'. He has guided successfully 12 Ph.D. thesis in Law and 20 thesis of LL.M. He is life member of the Indian Law Institute, New Delhi, The Institute of Constitutional and Parliamentary Studies, New Delhi and the Central India Law Institute, Jabalpur (M.P. India). He is the Chief Editor, M.D.U. Law Journal of M.D. University, Rohtak (India), he is on the Editorial Board of Central India Law Quarterly and he was also on the Editorial Board of Kurukshetra Law Journal. *Serkaria Commission on Centre — State Relations* had heard him for three hours on various aspects of Centre-State Relations on 19th September, 1984 at Shimla. Commission has quoted him in his report.

ENVIRONMENTAL POLLUTION AND DEVELOPMENT:
ENVIRONMENTAL LAW, POLICY AND ROLE OF JUDICIARY

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PREFACE

Mankind today faces the worst ecological crisis. Man has ruthlessly disturbed the balance of nature by cutting down forests, indiscriminately converting grasslands into areas of habitation, levelling and tunnelling mountains and changing landscapes. He has destroyed many ecosystems, generated chemical and radioactive pollution, produced nonbiodegradable matter like plastics, endangered plant and animal species, dumped lakes, rivers and oceans with sewage and industrial wastes. The possibility of green house effect warming the globe and of damaged ozone layer affecting life on earth haunts us like a ghost.

Thus the increasing of deserts, the shrinking of forests, the alarming pollution of water, air and land, extermination of endangered species and indiscriminate use and exhaustion of natural resources are the main problems which every nation will have to face and solve in the coming years. Necessarily the battle against environmental assault will have to be fought on many fronts. It will have to be fought from the forums of international and regional organisations from within national boundaries, from state boundaries within a federal system from densely populated regions, from state capitals, growing cities and towns, industrial belts, villages, beaches and mountains. Every nation will have to evolve devices and strategies on these lines for the maintenance of environmental safety and achievement of sustainable development.

This book makes an attempt to deal with these problems which India, as a developing nation, is facing in their efforts to evolve legal policy, norms and standards for better environmental regime and management. The awareness on the need for protecting the environment is steadily growing and innumerable measures are being taken in our country to meet the challenges of pollution and sustainable development.

This book contains eight chapters and Twelve appendices. It deals with key issues like jurisprudence of environmental law, environmental issues of global and national concern, environmental policy and people's movements for environmental protection, legal control of water, air, land and noise pollution and preservation of ecological balance. The role of judiciary in protecting environment has been critically elaborated. In the last chapter of the book 'probable future trends' are indicated and some useful suggestions are offered.

For the completion of this study, I have consulted the works of many learned authors and all of them have been acknowledged and listed in the bibliography. Thanks are due to the librarians and the staff of the libraries of the Indian Law Institute, New Delhi, Kurukshetra University, Kurukshetra and M.D. University, Rohtak for rendering all help available with them for the completion of this book.

My thanks are due to my student and colleque Dr. Naresh Kumar who helped me a lot in completion of this work.

I am indeed very grateful to my wife Suneel and children (Jiten and Nishtha) who are a constant and immeasurable source of inspiration to me for their help and cooperation. This book could not have been written but for the loving care and encouragement of my wife. My son Jiten and my daughter Nishtha constantly encouraged me to complete this book. Both of them voluntarily and willingly gave me the time which legitimately belonged to them. "The wives (and children) of writers contribute more than is ever acknowledged to the getting out of a book".

. Finally, I am very thankful to Mittal Publications, New Delhi for undertaking publication of this book.

ROHTAK
May, 1998

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CHAPTER ONE

Jurisprudence of Global and National Environmental Law

1. ENVIRONMENTAL IMPACT ON MANKIND: ISSUES OF GLOBAL CONCERN

Man and environment are always in close interaction. Hence, man has been conscious of environmental impact and influence all the time. However, due to the material boon and the euphoria generated by the unprecedented technological and economic progress in the 19th and 20th centuries, the environmental and ecological awareness tended to recede into the background.[1] The League of Nations — for all its international agenda — was virtually unconcerned about these issues. Nor did they figure as major issues in the UN Charter or any early programmes of the United Nations. But to-day, the environmental and ecological issues have climbed to the top of the global agenda.[2] Recently, India has made a proposal for a Planet Protection Fund at the Belgrade in the nineth NAM Summit (September 1989) and the Commonwealth Summit at Kuala Lumpur (October 1989). The Planet Protection Fund (PPF), to be set up under UN auspices, would provide an essential means by which restructuring of global economic activities can be brought about to help avert the threat of disaster confronting mankind and other forms of life on this planet. It will be subscribed by all nations to the extent of one-tenth of one per cent of their GNP (which would total 18 billion dollars) to develop and transfer technology which would restrain damage to the planet's ecology.

In 1972, the UN Conference on Human Environment held in Stockholm drew attention for the first time to environment and the related issues of pollution, ecological decay and resources depletion as matters of overwhelming global concern. And, as a first step to deal with all these problems, it set up the United Nations Environmental Programme (UNEP) for evolving fresh guidelines to integrate environmental concern in overall development and the lending policy of development banks, and proliferation of a large international body of environmental advocacy groups (EAGs). These groups are non-governmental bodies and therefore, seemingly free from charge of dictating terms. They collaborate with local like-minded groups to gain legitimacy in the countries that may be affected by their actions. The Montreal Protocol (1987) aims to control the release of ozone depleting CFCs, gases including Carbondioxide (CO_2) and methane (CH_4) released by refrigerators and industry and switch over to HCFCs (Hydrochlors Fluoro Carbons) substitute. It has come into force and UNEP is coordinating agency for implementing the protocol.

Thus mainly and internationally, the environmental concern is a three-dimensional problem. The three dimensions are:

(i) environmental pollution,
(ii) ecological decay or destruction, and
(iii) resource depletion

(A) Environmental Issues of International Concerns

The greatest environmental issues which have been a matter of international concern are:

(i) Depletion of Ozone Layer

The stratospheric ozone (O_3) is a product of billions of years of the photochemical process catalysed by the solar radiation. Between 15 and 55 kms. about the Earth, the ozone screen provides a shield for living creatures by filtering out dangerous ultra-violet rays from sunlight. Ultra-violet radiation causes sun burn, skin cancer, cataracts and can suppress the immune system.

Since 1973, it has been increasingly recognised that the ozone umbrella is being ripped off by the industrial activities of man. Soon after it was discovered that the chief culprit is a group of man-made chemicals called chlorofluorocarbons (CFCs). When invented in the 1920s, CFCs were considered miracle chemicals — the dream of the chemical industry and a boon for the environmentalists because of their non-toxic, non reactive and non-flammable properties. The main problem with the CFCs is their long life[3] in the atmosphere ranging from 75 to 125 years.

When the equipment using CFC is disposed of after long use, the CFC simply sneaks into the atmosphere. On reaching the atmosphere the CFCs are dissociated by sunlight into active chlorine compounds which in turn attack the ozone, generating a chain reaction. One molecule of CFC can destroy 100,000 molecules of ozone. At present, mankind releases 1.1 million tonnes of CFCs in the atmosphere. Since 1928, Chlorofluorocarbons have been used to cool refrigerators and air conditioners, propel aerosol sprays, clean computer chips and make foam rubber and the polystyrene containers common in food packing etc. This is in addition to the other agencies which contributed to the bulk of the carbon dioxide pollution.

More recently, according to Mr. Tom Clarkson, the metreorologist of New Zealand Government, the hole in the earth's protective Ozone layer over Antarctica has started breaking up, spreading ozone-depleted air northward. He has further noticed that the hole had begun to erode since first week of December 1989, but it was impossible to tell yet what would happen next. The last time such erosion was recorded in December 1978. According to him it is a man-made problem, not a natural event.[4]

(*a*) *Space Vehicles and Depletion of Ozone Layer*

Rockets which take off vertically carry ozone killers (Chlorine containing chemicals and nitrogen oxides) and remain on the earth's surface right into the stratosphere[5] the Soviet space experts point out. Every time a space shuttle climbs from zero altitude to 50 km mark, it ejects 187 tonnes of chlorine and chlorine containing compounds in the atmosphere. Since more of these reach the ozone layer from higher altitudes (the shuttle's solid fuel boosters stop working at 52.1 kms up) total emission reaches 200 tonnes.

During take-off a shuttle spews out tonnes of nitrogen oxides and close to 180 tonnes of aerosols aluminium oxides. As the atmosphere process vary, the experts place the ozone killed by each shuttle at a million tonnes or 0.3 per cent of the overall content in the atmosphere. They estimate that a shuttle with a payload of 29.1 tonnes can cause ozone loss of 300,000 tonnes per each tonne of payload. The same for a proton booster would be 38 tonnes of ozone. Comparatively, the ozone killing rate of an energia booster is only 15 tonnes.

As for the American Delta booster, the author's rate it as a record ozone killer which destroys eight million tonnes of the earth shielding gas during every take-off. The latest modifications of the Titan booster and the French Arian-5, according to them, employ solid fuel boosters and are better than the Delta but worse than the shuttle from the ecological point of view.

Coming to the question of stopping launchings of space ships to obviate thinning of the ozone layer, the Soviet experts are of the view that the problem could be tackled in a different way by taking positive steps like minimising production of ozone-killing chemicals, banning solid fuel fired rockets, and setting international restrictions for number and frequency of launches.

Besides, a research centre under the auspices of the United Nations to recommend coherent moves to restore the ozone layer could serve a useful purpose too.

(*b*) *Plugging with Balloons the Erosion of Ozone Layer*

But even if we are able to stop further erosion of ozone, something must be done to make up for the loss that has already occurred. A British Organization, Ozone Help (OH), has come out with a programme to produce ozone in the upper atmosphere. Under this scheme, a solar-powered machine is carried to high altitudes by balloons over the Antractica, where the ozone depletion has reached its highest. This "ozonator" is a simple electronic unit about the size of a large microphone and generates a charge of more than 15,000 volts. When this charge is emitted into the air, it produces a significant amount of ozone by converting the oxygen of the air. Each balloon may carry about 100 such ozonators powered by 300 small solar panels.

(*c*) *Legal Measures to Protect Ozone Layer*

The Montreal Protocol (1987) aimed to control the release of ozone depleting chemicals CFCs, was reviewed in 1990 and the member countries came to agreement to totally phase out CFCs and halons by the year 2000. It was made more effective. India and China also have now agreed to join this protocol.

(ii) Global Warming Due to Green-house gases

The large scale burning of fossil fuels (coal and petroleum) in modern industry and transport systems increases the concentrations of greenhouse gases such as carbondioxide (CO_2), Ozone (O_3) methane (CH_4), nitrous oxide (N_2O) and chlorofluorocarbons (CFCs), in the atmosphere. These greenhouse gases allow sun's rays to penetrate the earth's surface, but retard the return flow of the infra-red radiation. Thus the sun's heat would be trapped near the earth's surface, raising the earth's surface temperature over a period of time. Among all the gases of greenhouse carbondioxide alone plays the major role in creating greenhouse effect.

The fluctuations in composition of the atmosphere, and changes in temperature over the past 200,000 years can be determined by analysis of tiny air bubbles trapped in ice that has accreted year by year in the Antarctic and Arctic. From cores drilled into these ice caps, a record of changes can be deduced and carbon dioxide concentration and temperature estimates for the *past 160,000 years have been determined from the ice core* *data obtained from the Antarctic*. The analysis of the data suggests that *atmospheric carbon dioxide fluctuated from about 180 to 290 parts per million (ppm) and the temperature rose and fell over a range of 9 to 10 C°*, in almost perfect rhythm with the rise and fall of carbon dioxide concentrations. Carbon dioxide is the main though not the sole, greenhouse or heat regulating gas of the modern atmosphere.

Only the past century, have the activities of the human species become a dominant force in changing the composition of the atmosphere. *The current (1990) carbon dioxide levels of 354 ppm, demonstrate the rapid increase in carbon dioxide concentrations due to human activities.*

It is assumed that a doubling of the carbon dioxide level by burning fossil fuels would increase the temperature by 1.5°C to 4.5°C. The heat would raise the mean sea level by expanding sea water and by melting glaciers and polar ice-caps. This will result into flooding of coastal areas. The winters might be shorter, wetter and warmer, summers longer, hoter and drier, particularly in mid-continental areas. Areas in high attitudes, such Siberia, Canada and Scandinavia, would experience increases in temperature.[5a]

All scenarios on global warming show that significant climate change will occur over a period that parallels the projected doubling of the world's population, or from 1990 to 2075. Most of the population increase will take place in the Third World: thereby upping those nations overwhelming obligation to feed, care for educate and find jobs for their peoples. In addition, more people represent increased demand for energy and products that presently lead to pollution. Even if family planning is made available world-wide, man will have to make his goal sustainable development; economic progress that doesn't exhaust nonrenewable resources.

According to the World Resources Institute (WRI) of the U.S.A., the US contributes 23.7 per cent to the worldwide emission of carbondioxide since 1986. While the worldwide growth rate of carbondioxide emission was 3.6 per cent, the US rate was 4.1 per cent. However, our current consumption of fossil fuels is 30 times greater than it was in 1900.

(iii) Radioactive Fallouts And Environmental Hazards

Radioactive fallouts from nuclear plants, nuclear testing, disposal of nuclear wastes and occasional nuclear accidents and long-term storage of nuclear materials are greatest environmental killers.[5b] The threat of millions of tonnes of high grade radioactive waste which remains hazardous for thousands of years — remains insurmountable.

Nuclear power plants are very costly affair. The last nuclear power projects completed in the US were proved white elephants, some costing over 5,000 per kilowatt. In India, according to the CAG report of 1987-88 of the Narora Nuclear power plant, the original estimate of the project was Rs. 209.82 crore, but by March 1988, when only 87 per cent of the project was completed, the money spent was already Rs. 487 crore. The actual project cost of this plant has been Rs. 600 crores i.e. three times as much as originally planned. The life of a nuclear power project ranges between 25-40 years.

The radioactive waste arise in every part of nuclear power project programme, right from the mining and from reactor operations to the running of reprocessing plants and all other fuel cycle facilities. They arise in the facilities devoted to waste management themselves, for inhandling waste, more waste is generated.[5c].

Thus, there are three major hazards from nuclear power. First is low level radiation exposure at various points in the fuel cycle, from uranium minning to reactor operations to recycling of uranium and plutonium and the management and disposal of wastes. Second comes from possibility of a reactor accident with the chance that high concentration of radioactivity could be released. For example, the Chernobyl nuclear plant disaster of 1986 in U.S.S.R. is an eye opener and the gravest warning to all mankind. Twelve and half million acres of farm land and 1.5 million acres of forest in the Ukraine alone were contaminated. The contaminated area had 1600 towns and villages having a population of 1.5 million people. The third relates to possible thefts, forcible seizures, or diversions of nuclear explosive materials in the course of fuel cycle operations. Plutonium is the material of serious concern as it can become a dangerous weapon in the hands of unscrupulous terrorists. Moreover, there is almost no experience available in the decommissioning of large scale nuclear power reactors. Nearly half of the reactors working in the world will need to be decommissioned during this decade.

Hence a review of the policy to increasingly follow the nuclear option to meet our growing power demand is absolutely necessary.

(*iv*) *The Phenomenon of Acid Rain*

The acid rain may be defined as the increasing level of acidity in rain water. The acidity and alkalinity in water are measured in terms of PH value. It ranges from 0 to 14. The approximate pH value of 7 represents the neutral characteristics of the water. The lower the value than the natural pH level, higher is the acidity, whereas, higher the pH value, higher is the alkalinity. Take for example, if the pH level of water decreases from 7 to 6 the acidity increases in the water is ten fold. Actually, rain water with a pH value of 5.6 is largely neutralized by other substances in the atmosphere. If the pH value of 5.6 of the rain water goes down, it becomes acid rain. Further, if the pH falls below 4.5, all fish will die due to acid rain.

The phenomenon of acid rain arising from coal-fired power plants, smelting operations and automobile exhausts, whose precipitation may fall upon hundreds of miles away from the source. Going by the name of 'acid rain', this is an odourless, tasteless pollutant. The pollutants — mostly nitrogen and sulphur emitting from the USA — get transformed into clouds and then descend in Canada, with disastrous results. It has already killed 250 lacks in Ontario, Canada and another 50,000 are in danger of totally polluted. Similarly, emissions from British industries have done considerable damage to fish in the lakes are rivers of Sweden and Norway.

One of the chief culprits in acid rain in *sulphur dioxide*, which reaches the atmosphere by many routes. *Sea spray*, rotting vegetation and, in some places, volcanoes are important natural sources. All over the world, perhaps half the sulphur in the air comes from such sources and half from burning *fossil fuels*. Over Europe, the proportion from burning fuel is about 85 per cent. Once sulphur dioxide reaches the atmosphere, it reacts with moisture in the air. First, it is oxidised, taking up *atoms of oxygen to become a sulphate ion. This then combines with hydrogen to form sulphuric acid*. Not all the sulphur dioxide, however, becomes sulphuric acid. The process of oxidation can occur in dry air as a 'gas phase', reaction, but it is usually slow. A large part of sulphur dioxide, can travel in stable air with little sign of conversion to acid. Over much of Europe, most of the sulphur dioxide falls to the ground unconverted.

Nitrogen oxides are given off by power stations and car exhausts; and include both nitrogen dioxide and nitric oxide. In the air, nitric oxide quickly converts to nitrogen dioxide, which is itself oxidised and changed into nitric acid.

Many of the thin soils that cover granite or sandy rock in northern Europe, Canada and parts of the USA and India have been acidic ever since they were formed ten thousand years ago at the end of the last ice age. Unable to neutralise acids that arise from natural processes, many of these soil contain the equivalent of thousands of years of deposition. Natural acid in soils is dominated by carbonic and organic acids. But to transfer acidity to surface waters that drain the soils requires mobile negative ions to bind to the acid hydrogen ion. The carbonic and organic acids do not contain such ions. The strong acids found in acid rain, however do.

In particular, the negative sulphate ion in sulphuric acid is mobile within the soil and efficiently transfers acidity from soils to surface waters. The nitrate ion, too, would behave in this manner if it were not normally taken up by plants first.

Fish, notably brown trout and salmon, have disappeared from thousands of lakes and several large rivers in Scandinavia since the 1950s. The deaths are usually due to aluminium poisoning. All soils contain massive amounts of aluminium. The mixture of aluminium and acid in lakes and rivers has a profound effect on freshwater ecology. Acid lakes are usually crystal clear with luscious carpets of green algae. All this green is deceptive.

Acid waters draining from the soils wash out nutrients and liberate aluminium, which the roots of trees may take up. Without essential nutrients, such as magnesium and calcium, trees strave to death. Sulphur dioxide also directly damages leaves and blocks the stomata on leaves.

Gases from vehicle exhausts reach levels each summer that are toxic to some trees, especially in conjunction with sulphur dioxide. Ammonia, as we have seen, efficiently oxidises sulphur dioxide to create the sulphate ion. The resulting ammonium sulphate there after forms on the surface of vegetation. Ammonia reduces frost-hardiness and ammonium sulphate, on reaching the soil, creates both sulphuric and nitric acids.

The atleast twist in the debate over what killed the dinosaurs is the suggestion that acid rain was the culprit. Two geologists from the Massachusetts Institute of Technology suggest that a large comet hitting the Earth at 65 km per second would possibly have led to strongly acidic rain falling all over the world.

In 1980, the US Congress pressed the government to spend 10 years studying the complex causes of acid rain. The National Acid Precipitation Assessment Programme, in its September' 87 report, remarked that though rain, especially in northest of the U.S., was markedly acid, there had been few direct short term effects on crops or healthy forests. The exceptions usually arose when fog was acidified. Ozone created when nitrogen oxides reacted with hydrocarbons in sunlight, had harmed crops though.

The report noted that reductions in emissions of sulphur dioxide did not lower the acidity of rain in a liner fashion, because the creation of acid rain depends in part on the presence of catalysts. These include pollutants such as ozone and hydrogen peroxide.

The only way to ameliorate the effects of acidity in the short term is to combine a clean up of the air with dumping vast quantities of linestone in waters and soils and adding fertilizers to forest soils.

(*v*) *Large-scale Use of Pesticides and Chemical Fertilizers in Modern Agriculture*

Large-scale use of pesticides and chemical fertilizers in modern agriculture in developed and developing countries has widely poisoned land and water.[6] Presently, an effective way to reduce environmental losses due to pesticides is by using the controlled release (CR) system.[6a] Agriculture also releases long-lived toxic pesticides into the air.

(*vi*) *Large-scale deforestation and Environmental Pollution*

Large-scale deforestation has caused a serious environmental and ecological problem especially in the Third World countries leading to deforestation to the extent of 11 million hectares every year. Excessive deforestation leads to increased floods, soil erosion, silting of rivers, contraction of agricultural production areas and eventual desertification and widespread food scarcity. According to the Brandt Commission Report this has deprived thousands of people of their gainful jobs or work, most notably in Nigeria, Panama and Bangladesh and also in India specially in the regions of Kumaon and Garhwal. The clearing of forest lands has had major environmental effects. It reduces the amount of carbon absorbed by the great forests and thereby contributes to atmospheric carbondioxide increases.

(B) The Brundtland Report of 1987 on Environment and Development

The World Commission on Environment, headed by Gro Harlem Brundtland, Prime Minister of Norway, was set up as an independent body in 1983 by the United Nations.[7] Its main task was to draft "a global agenda for change" in such a way as to ensure that human progress throughout the world would be sustained through development without bankrupting the resources of future generations.

Accordingly, the commission made abroad range of recommendations in its report.[8] The Brundtland report is notable for its global perception of environmental issues; its recognition that environment and development are not separate challenges but are inexorably linked; and its sensitivity towards the problems confronting developing nations.[9] The report defines sustainable development as "a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony

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and enhance both current and future potential to meet human needs and aspirations".[10] Sustainable development, therefore, requires that the rate of depletion of non-renewable resources should foreclose as few future options as possible. To help reorient development policies, the commission has made a number of recommendations in the key areas of population, food security, genetic resources, energy, industry and human settlements. Significantly, it has also recommended institutional and legal changes at both national and international levels.

(C) Global Lobbying to Save Environment

Today, a large number of environmental activist groups have emerged locally all over the world. There are already a large number of international agreements concerning environment.[11] These international efforts have been seen with suspicion by the developing world.[12] It has been argued that such *an environmental regime* will not only impose a heavy cost on the poor countries, but it will also amount to another kind of 'imperialism' where the industrialised countries could dictate the industrialising countries what they should be doing.[13] In every international environmental conference with participation from developing countries this point has been coming up time and again. Naturally, this has created additional scope for the *environmental advocacy* groups to function.

The industrialised nations like the United States have attempted to curtail nuclear energy generation in the third world countries, step up their own energy generation resources based on further emission of greenhouse gases and want to apply uniform standards of curbs in respect of greenhouse gases to both energy affluent developed nations and energy poor developing nations.[14] This is another way of saying that they want a regime in which rich nations will continue to remain so while poor nations should persist to languish in their poverty.[15]

The rich nations had also attempted to put forward the same kind of arguments in respect of chlorofluorocarbons which are used on *refrigerants and aerosols*. Earth's protective ozone umbrella is being ripped off by industrial activities. The chief culprit is a group of man-made chemicals called chloroflurocarbons (CFCs). *One molecule of a CFC can destroy 100,000 molecules of Ozone.*[16] These chemicals generated in vast quantities in industrialised nations have been released into the atmosphere over a period of years in spite of repeated warnings of the scientific community of the world. They have destroyed part of the protective ozone layer around the earth which shields the planet from excessive ultra violet radiation reaching it. Such excessive ultra violet radiation causes skin cancer and is also believed to affect the production of certain proteins in plants which are essential to cause *photosynthesis* which process carbon-dioxide to produce vegetation. After realising that their past excesses have produced two large holes in the ozone layer (a larger one over the Antarctic and a Smaller one over the Arctic), the developed nations signed the *Montreal Protocol in 1987* which required all nations to cut down and finally eliminate the production of chloroflurocarbons by the year 2000.[17] But, India has not signed the protocol since the Indian refrigeration industry is in an infant stage. India has suggested that it should be compensated if it were to cut down on the production of chloroflurocarbons and also new technologies to produce harmless substitutes should be made available without undue burdens in terms of costs. They want us to change over to HCFC (Hydrochloro Fluoro Carbons) which is only 50 per cent as dangerous and also to be phased out, and for that India has asked for $ 245,000,000 but they have agreed to give only $ 6.5 million.

Thus while repairing the environmental damage, it is the concern of all nations of the world and also natural justice demands that those nations who caused greater damage and built up their affluence by polluting the environment should pay their due share of the costs of repairing the damage.[18] Whereas the attitude of the US and other like minded countries is that while they benefitted from ravaging the ecology of planet, the costs of repairing such damage should be spread out to all countries, including the poorer countries.

Thus the environmental pollution is a global as well as national phenomenon. It requires, therefore, international and national solutions, policies and laws to contain this problem and further to manage the resources to the advantage of mankind.

International efforts currently and rightly concentrate on the issue of greenhouse gases and climate. Preparatory work on a framework convention on climate change was initiated by the World Meteorological Organisation (WMO) and UNEP following a request from the UN general Assembly in 1988 (Resolution 43/53 protection of the Global Climate for present and Future of Mankind). The main mechanism for these preparations has been the WMO/UNEP International Panel on Climate Change (IPCC) established in November 1988.

The first major report of IPCC in August 1990 summarised the scientific knowledge, the socio-economic impacts of climate change, and put forward policy response options including a draft of elements of a Framework Convention on Change of Climate. Following extensive debate on both technical and political levels at the Second World Climates. Conference and its formal intergovernmental negotiations begin by early 1991. An international agreement with real impact was signed in Brazil in 1992 known as the Rio Declaration consisting of 27 principles concerning almost all countries of the world.

Thus the massive drafting and codification at the international level heralded a new era of economically friendly world and legal regime with particular emphasis on the commonality of biological and ecological resources marked the phase between 1972 to 1992.[18a] In recent times, taking note of declarations in Stockholm (1972) and Rio (1992), the polluter pays principle for environmental pollution liability has been universally applied.[18b]

(D) Earth Summit on Environment and Sustainable Development (1992)

The Earth Summit or The United Nations Conference on Environment and Development (UNCED) was held at Rio de Janeiro, capital of Brazil from 3 to 14 June, 1992. It was the largest international conference even in the history of international relations. It was attended by 178 nations and more than 20,000 participants. The plenary session was attended by 130 heads of State and Government. UNCED Chief Maurice Strong described it a "parliament of the planet". According to the environmental experts, this was perhaps the last chance to save our dear planet Earth. The success of the Conference depended on the reconciliation of the interests of North and South. As remarked by Maurice Strong, Secretary General of UNCED, "If we fail at Rio, it will be one of the greatest breakdowns ever in international relations especially concerning North and South". Indeed, "This is our last chance".[19]

The Earth Summit was the culmination of a series of UN Conferences beginning with the Stockholm Conference on the Human Environment in 1972. There was a growing awareness and common concern in the world about the constantly increasing degradation of global environment. Much of this degradation is due to patterns of production and consumption in the industrialized countries. But for the purpose of environment, the entire planet Earth, is one and indivisible. Hence the consequences of degradation of global environment are also shared by nearly 80 percent of the world population which resides in the developing countries. The Rio Conference therefore had discussed the topics such as global warming, ozone depletion, climatic changes, biological diversity and management of the forests etc.

(*i*) *The Agenda at the Summit*

Following were the key issues that were placed in the agenda for discussion at the Earth Summit.[20]

(*a*) To evolve the consensus on ways and means to cut down on the emission of gases like carbon dioxide, CFCs and methane which are largely responsible for the green house effect and consequent global warming.

(*b*) To devise a mechanism that would make environment — friendly technology transfer (relating to cleaning up pollutants, improving energy efficiency etc.) from developed countries to the developing countries easier and cheap.

(*c*) To evolve a global funding mechanism for transfer of funds from the rich North to the poor south to help the latter spend more on environment related projects.

(*d*) To emphasize the importance of population control as a major factor in reducing the global damage to the environment.

(*e*) To evolve a consensus on preserving the world's forest and its rich variety of flora and fauna.

(*f*) To evolve a consensus on the "polluter must pay" principle which stipulates that the industrialized countries being largely responsible for polluting the environment must handle a larger share of the financial burden in the cleaning up operations.

The historic Rio Conference unanimously adopted the major international documents, viz. Earth Charter to be known as Agenda 21 which stipulated a voluminous action plan to promote a global transition towards sustainable development;[21] and the Rio Declaration consisting of 27 principles concerning almost all countries of the global community, and enlisting general rights and obligations on environmental protection[22]

(*ii*) *Agenda 21 : Action Plan for 21st Century*

This is the longest document consisting of nine hundred odd pages and forty chapters. The Agenda is not legally binding but rather an action plan for 21st Century. The chapter on International Co-operation for Sustainable Development in developing countries has four programme areas — promote sustainable development through trade liberalisation: trade and environment mutually supportive; provide adequate resources to developing countries; and encourage macro-economic policies conducive to environment and development. Chapter 3 is very significant for the third world. It says that environmental policies should take into account those who depend on the resources for their livelihood. This means that the needs of the tribals and village fuelwood collectors cannot be ignored while enacting forest laws. Chapter-4 calls on the developed countries to curb their wasteful consumption habits and urges the Governments of those countries to adopt policies that encourage sustainable consumption patterns. Agenda-21 also recognises the necessity for population control and urges the governments to meet the basic health needs of the people, protect vulnerable groups, reduce health risks from environmental pollution, ease the pressure on cities caused by the migration from villages, promote mass transport systems, instead of the highly wasteful personal transport that has been till now adopted by the developed countries. Energy efficiency and conservation is an important part of the Agenda. As energy use is directly related to pollution, (for example, more cars on the roads mean more energy and more pollution), this has also been linked to the climatic change. The agenda also calls upon the nations to promote renewable and sustainable energy resources but some of the petroleum exporting countries have recorded reservations on this. Deforestation and Desertification are dealt within two chapters. Forests are recognised as having multiple roles and functions and their management has to be sustainable. Protection of oceans and other water bodies from pollution, and protection of the quality and supply of fresh water resources are other matters dealt within this section. Chapter 19 discusses management of toxic wastes. It calls upon the countries to exchange information on toxic chemicals, establish risk reduction programmes and prevent illegal international traffic on toxic and dangerous products.[23] The most contentious part of the Agenda 21 related to finance.[24] There was a wide gulf between the views of the developed and developing countries about the proposal to establish a special fund for implementing the accepted plan of action. According to the Secretariat of the UNCED, sustainable development as per programme enshrined in Agenda 21 would cost $ 625 billion annually. Out of this $ 200 billion is already spent by South and they would be required to raise $ 300 billion from their own resources. Rich nations were expected to give the remaining $125 billion, out of which they already spend $ 50 billion. The Asian and African countries however, insisted that the fund should start with a sum of $ 250 billion. As the conference progressed some of the above differences were narrowed down. India proposed a "Planet Protection Fund (PPF)" to help buy environment friendly technologies. On 13th June, 1992, as the Earth Summit entered the second day with heads of States and governments stressing the link between environment and development, a contact group of Ministers held intense negotiations and finally came up with an agreement to fund environment and developmental programmes outlined in the Agenda 21 Action Plan. Thus the deadlock over the fund issue was resolved. The group of 77 representing the Third World Nations was able to specify that the aid administered by the Global Environmental Facility (GEF) would not be subject to "no new conditions". As regards the second contentious point concerning the date when the industrialised nations would meet a UN recommendation of donating 0.7 percent of their GNP to international development fund, the Group of 77 wanted the year 2000 as a deadline. On the other hand, the U.S., U.K. and Japan wanted the document to be flexible by simply stating "as soon as possible". Finally a compromise was made and the words "the year 2000 or as soon as possible thereafter" were incorporated. However, the North succeeded to include a clause on subsidized or conditional funds for programmes outlined in Agenda 21. The clause included in a call for new and additional resources to help the South implement sustainable development programmes may relieve the North of any obligation for direct aid allowing them to use subsidies and trade agreements instead.[25] The U.S. President George Bush agreed to increase environmental aid by 66 percent this year. Germany committed between $ 2 to 3 billion more for development aid. The European community made a similar commitment. The total however did not reach half the said amount if the present aid on these programmes was also included. Thus, so far as the funding of environmental programmes, the final result, to say the least, was far from satisfactory. In fact, the South was outwitted by the North.[26]

In addition to the above conventions, one of the major achievements of the Earth Summit is the adoption of the *Rio Declaration* which contains 27 principles concerning almost all the countries of the global community, and enlisting general rights and obligations on environmental protection.[27] They are as follows:

1. Human being are at the centre of concern for sustainable development. They are entitled to a healthy and productive life in harmony with nature.
2. States have, in accordance with the Chapter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or areas beyond the limits of national jurisdiction.
3. The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

4. In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.
5. All States and all people shall co-operate in the essential task of eradicating poverty as an indispensable requirement for sustainable development.
6. The special situation and needs of developing countries, particularly the least developed and those most environmentally vulnerable shall be given special priority. International actions in the field of environment and development should also address the interests and needs of all countries.
7. States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the earth's ecosystems. In view of the different contributions to global environment degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.
8. To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.
9. States should cooperate to strengthen indigenous capacity — building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.
10. Environment issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision — making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

11. States shall enact effective environmental legislation, environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply. Standards applied by some countries, may be appropriate and of unwarranted economic and social cost to other countries, in particular developing countries.
12. States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus.
13. States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.
14. States should effectively co-operate to discourage or prevent the relocation and transfer to other States of any activities and substances that cause several environmental degradation or are found to be harmful to human health.
15. In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
16. National authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.
17. Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a sig-

nificant adverse impact on the environment and are subject to a decision of a competent national authority.

18. States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to help States so afflicted.
19. States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.
20. Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development.
21. The creativity, ideals and courage of the youth of the world should be mobilised to forge a global partnership in order to achieve sustainable development and ensure a better future for all.
22. Indegenous people and their communities, and other local communities, have a vital role in environmental management and development because of their knowledge and traditional practices. State should recognise and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.
23. The environment and natural resources of people under oppression, domination and occupation shall be protected.
24. Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development as necessary.
25. Peace, development and environmental protection are interdependent and indivisible.
26. States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the charter of the United Nations.
27. States and people shall cooperate in good faith and in a spirit of partnership in the fulfillment of the principles embodied in this declaration and in the further development of international law.

Yet another achievement of the Earth Summit was the agreement to create a new UN body to monitor compliance with environmental treaties and review progress towards the goals of the Earth Summit. The most important achievement of the Earth Summit was that it created an awareness among the political decision-makers of the world that economic development cannot go in the manner it has been pursued till now. Even the environmental activists who lent their wisdom to the meetings as Rio have learnt to think of the globe as a whole.[28] The Earth Summit moved with a great stride to "save our planet" and Rio is but one moment on a long road, a moment which is useful because of the awareness that has been created, the decisions that have been taken, the mobilization to which it has given rise because today man is still a formidable destroyer.[29] More recently under the auspices of the Global Environmental Facility (GEF) there was held a 'Global Cimate Meet' conference in New Delhi from April 1 to 3, 1998. India strongly urged the developed world to strictly enforce stringent emission norms and limit pollutants to prevent an ecological disaster.[29a]

2. ENVIRONMENT AND ENVIRONMENTAL POLLUTION IN INDIA

(A) Meaning of Ecosystem, Environment And Environmental Pollution

The world 'ecosystem' is shorter version of the phrase 'ecological system'. The position of Earth on which life exists is termed as biosphere. The biosphere consists of ecosystems of wide variety, small and simple, large and complex. Each ecosystem is a functioning, dynamic system in which the lithosphere, atmosphere and hydrosphere interact with life.

Environmentalism is variously construed, as a social movement, a cluster of ideas based on ecology, a back to nature philosophy, or merely a greater interest in environmental affairs. The quality of life in a local context has been a unifying factor, as much important as the survival of mankind issue in a global context.

To understand the main issues involved in environmental management[30] and control of pollution, it would be worthwhile to understand the definition of the term 'environment'. The term '*environment could be defined*[31] as the complex aggregate of all external conditions which affect life, development and survival of an organism. The environment includes the complex physical, chemical and biological factors surrounding an organism or an ecological community. Such factors act and interest with various species or organism to affect their form, growth, and survival. Thus, the environment comprises our air, water and land resources. Any unfavourable alteration of this environment is called *environmental pollution*.[32] Thus environmental pollution has been defined[33] as the unfavourable alteration of our surroundings, wholly or partially as a byproduct of man's actions, through direct or indirect effects of changes in energy patterns, radiation levels, chemical and physical constitution and abundances of organisms. These changes may cause environmental pollution through a combination of factors such as population explosion, unparalleled affluence, technological progress and major incidents affecting health and well being of large number of people.[34]

(i) Types of Pollution

The following types of pollution are generally recognised. These are:

1. *Water Pollution*: The presence, in concentration higher than normal, in natural water ways (lakes, streams, rivers and oceans) of dissolved or suspended foreign materials such as silt, chemicals, fecal matter, metallic elements, organic material and oil etc.
2. *Air Pollution*: The presence in the atmosphere of solid liquid or gaseous compound which are not normally present or which are in excess concentration and have no beneficial effect.
3. *Land Pollution*: Deforestation, industrialisation, urbanisation and indiscriminate use of fertilisers have caused alarming degradation of land and environment.
4. *Noise Pollution*: The presence in the open atmosphere or in a closed space of a noise generally considered undesirable except by the person who is responsible for it.
5. *Solid Waste Pollution*: The presence on land or water of solid material, organic or inorganic which have no useful qualities.
6. *Chemical Pollution*: The presence in animal tissues and plants including feed or foodstuffs, of adulterant chemicals which have injurious effects.
7. *Thermal Pollution*: The discharge into the environment of a steam of air or water which is at different temperature from that of environment at the point of discharge or downstream of this point which have no beneficial effect.

(ii) Gravity of Environmental Pollution

The Citizen's Report on environmental pollution states that pollution in India is on the increase and according to this report the quantum of pollution[35] is as under:—

Land

1. Every six months, more too soil gets washed away than has been

used to build all bricks houses across the country.

2. In the highly grazed Shivalik hills six cm. of top soil, representing nearly 2400 years of local ecological history, often disappears with one monsoon.
3. Between a quarter to a half of the lands brought under irrigation can go out of cultivation permanently because of soil salinity and water logging.

Water

1. Seventy per cent of all the available water in India is polluted. About 73 million work days are lost due to water-related diseases.
2. Before the Yamuna river enters Delhi 100 milliliters of its water contain about 7500 coliform organism. After it received Delhi's waste waters the coliform count to 24,000,000 per 100 milliliters.
3. In a 158 km. stretch of the Hoogly, the average annual yield of fish in the unpolluted and polluted zones was 719.25 and 124.94 tonnes respectively.

Forests

1. Cherrapunjee — the wettest spot on earth and once covered with lush subtropical forests is today a barren area.
2. Though the forest department controls 23 per cent of India's total area, only about 10-12 per cent has adequate tree cover.
3. Over one million hectares of forests are cut every year, according to unofficial estimates. Some 0.15 millions hectares of forests are lost to development projects.

Atmosphere

1. Levels of sulphur dioxide in several Indian cities has already exceeded permissible limits set by the W.H.O.
2. About 60 per cent of Calcutta's residents suffer from respiratory diseases because of air pollution.
3. The biggest environmental problem to face the world may come in the form of unpredictable climatic changes caused by alarming increases in atmospheric carbon dioxide levels.

Habitat

1. India's urban population has doubled in the last 20 years. In the 30 years between 1951 and 1981 Calcutta and Hyderabad have doubled their populations. Greater Madras and Ahmedabad trippled, and Delhi and Bangalore quadrupled.

2. The urban housing backlog has grown from 2.9 million to 4.5 million in the last ten years.

Wild-Life

1. With only two per cent of the world's land mass, India possesses around five per cent of the known living organism on earth.
2. Today a significant portion of the 15,000 plant species and 75,000 animal species found in India are threatened by the pressure of human activity on land and forests.
3. A little over ten per cent of India's flora faces extinction many species may be lost even before possible values is known to society.

This clearly implies that problem of environmental pollution[36] is not only grave but also not limited to any one discipline. It may be economic problem. It may be a problem relating to health of human beings. Since it affects all living organisms, it is a problem in conservation of natural resources. Hence, it would be imperative that any effort towards better management of environment and to check the rate of pollution would have to be multi-disciplinary one.

Environmental protection and its management thus implies broadly two aspects:

(*i*) Conservation of natural resources such as water, air, land, forests, wild life and fisheries etc.;

(*ii*) Control of pollution of environment by natural or other causes.

Obviously environmental protection and its management laws cover not only control of pollution but also preservation of natural resources.

(B) Common Elements that Cause Environmental Pollution

"Environmental pollutant" means any solid, liquid or gaseous substance present in such concentration as may be or tend to be injurious to environment.[37] These pollutants enter the cycles of land, water and air systems in such concentration as may adversely affect the structure, function and growth of the biotic components of the eco-system, namely, human beings, animals and plants. Hence, to contain the concentration of pollutants within the tolerable limits, it is necessary to evaluate the pollutants in terms of four criterias, namely, (*i*) the nature and properties of the pollutants, (*ii*) the space, time and context of the emission, (*iii*) the specific environment affected by it and (*iv*) the impact on ecosystem. This calls for eternal vigilance and concerted effort by the Government, busy bodies and the public to avert ecocide.[38]

The elements that generally cause pollution can be classified into three main categories.[39] In the first category are: elements like carbon, oxygen, phosphorus and nitrogen which are vital to all forms of biological life but which can form harmful compounds. In the second category are elements like: strontium, uranium and plutonium which cause radio active pollution. In the third category are: toxic heavy metals like mercury and lead and toxic chemicals, like chlorine arsenic used in insecticides. There are such 16 elements that generally cause environmental pollution. How these elements are directly or mainly linked to pollution has been shown Table 1:

Table 1

Element	*Main Link to Pollution*
1. Hydrogen	Constituent in Pesticide
2. Carbon	Constituent in atmospheric pollution (carbonmonoxide) and pesticides.
3. Nitrogen	Constituent in photochemical smog
4. Oxygen	Constituent in atmospheric pollution (carbonmonoxide and sulphur dioxide)
5. Phosphorus	Causes water pollution by excessive algal growth.
6. Sulphur	Constituent in atmospheric pollution from coal burning power plants
7. Chlorine	Constituent in persistent pesticides
8. Arsenic	Constituent in pesticides
9. Strontium	Radio-active isotope
10. Cadmium	Heavy metal: water pollutant from zinc smelter waste
11. Iodine	Radio-active isotope
12. Cesium	Radio-active isotope
13. Mercury	Heavy metal, toxic water pollutant from the manufacture of some plastics and pesticides
14. Lead	Heavy metal, toxic by-product of burning gasoline
15. Uranium	Radio-active element
16. Plutonium	Radio-active element

Source: G.P. Tripathi, *Ecosystem, Pollution and the Man* (1984) C.U.L.R. 61.

Thus, land cultivation on a massive scale, urbanisation through the removal of forests and grass lands, industrialisation, construction of dams and canals for water management, extraction of minerals and excessive exploitation of other natural resources in a consistent manner is bound to reduce the productivity of the ecosystem and induce collapse of the Earth's life supporting capacity and thus causes grave environmental pollution.

3. SOURCES OF ENVIRONMENTAL LAW IN INDIA

Environmental standards and values are a concern not only of the planners and scientists but also of legislators and lawyers. The legal machinery with which standards are to be enforced is of great significance for pollution control and management of environment. For enforcing environmental standards and for checking their violations, there should be law. The environmental law can be derived from two principal sources:[40]

(a) Common law developed by courts through judicial precedents; and

(b) statute law with the regulations and by laws made thereunder.

Under the common law, the first source of environmental law, a person can sue for nuisance when an act endangers his life, health, property or comfort or obstructs him in any way in the enjoyment, of rights common to all people. But in many instances of environmental pollution the question may be of public nuisance when the act affects the reasonable comforts and convenience of the general public. Invariably classaction may not be possible due to procedural difficulties such as the necessity to prove standing to sue and the question whether the complaint had suffered direct substantial injury. Recourse to judicial proceedings is a very costly affair for the ordinary individuals who actually suffer substantial injury. Judicial remedy finally settles only dispute between the plaintiff and polluter, the rights of many other aggrieved persons remain unsettled.

Statute law, the second source of the environmental law, has many advantages over the common law. Statutory law can declare certain action or inaction as offence and lay down deterrent sanctions as well as effective remedy. It can provide better opportunities of public participation in pollution control agency hearings and avoid dragging people and institution to costly and protracted litigation. Above all through the statutory law the State can rather concentrate on preventive measures than confine to remedial action. Thus the common law hurdles can very well be eliminated by providing in the concerned statutory law classactions and citizens suits.

The shift in governmental policy towards the sustainable development is clearly reflected in the increased legislative activities in the sphere of environmental protection. Through the constitution (Forty-second-Amendment) Act, 1976, the policy of environmental protection was given constitutional status. Article 48A, was added to the directive principles of state policy and imposed on the state the responsibility to protect the environment: "The State shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country". Article 51A imposes a similar duty on all citizens. The amendment also moved "Forests" and "Protection of Wild animals and birds", from the state list to the concurrent list.

Parliament can make laws with respect to the matters contained in the Union List [41] of the Seventh Schedule and State Legislature with respect to matters contained in State List.[42] But Parliament and the State Legislatures are competent to make laws with respect to any of the matters contained in the Concurrent List of the Seventh Schedule.[43] However, Article 246 makes parliamentary legislation on the matters in the Concurrent List paramount. According to Article 248 residuary powers of legislation are also vested in Parliament. Article 252 of the Constitution enables Parliament to legislate for two or more States by consent.[44] Article 253 also empowers the Parliament for exclusive legislation even on the matters enumerated in the State List for implementing any treaty, agreement or convention with any other country.[45]

Statutory provisions aimed at protecting the environment and control of pollution are found in more than 200 Central and State laws. In most of these statutes, however, environmental concern is only incidental to the main objective of the enactment[46] Despite a large number of enactments, this piecemeal approach to curb environmental degradation proved inadequate and unsuccessful. In the early 1970s, India entered into a new era in the field of environmental legislation, with Parliament enacting laws specially aimed at conservation and protection of environment such as the Wild Life (Protection) Act 1972 and the Water (Prevention and Control of Pollution) Act 1974. These laws represent the country's first effort to deal exclusively and comprehensively with environmental issues. Completing the core of India's environmental legislation, the Parliament enacted the Forest (Conservation) Act 1980, the Air (Prevention and Control of Pollution) Act 1981 and the Environment (Protection) Act 1986. Thus, today the effective source of environmental law is the enactment of law by legislature.

4. Possible Solutions to Control Pollution

Having outlined the problem of pollution it becomes necessary to see what can be done to reduce and eliminate it? How can social or private benefits and costs be brought into closer conformity? There are at least three ways to solve the problem. These are:

(*i*) Direct Regulation

(*ii*) Subsidization
(*iii*) Incentive Pricing

An efficient solution would undoubtedly involve all three techniques along with 'best practicable means' (6 pm) approach of pollution control.

(A) Control of Pollution Through Direct Regulation

The traditional approach to control environmental pollution has been legal regulation. As and when a country faces with a serious problem of a rolling tide of polluted water and air, the spontaneous reaction of the country is to pass a law ordering the dirty water and air to half. But, law done does not necessarily assure compliance.

One of the difficulties with pollution control laws is that very oftenly they are too sweeping in nature. To control pollution, laws will be enacted frequently that demand an inappropriate standard of pollution control or fail to provide financial burdens which law entail. It is an established fact that laws will be ignored or violated if they involve substantial inconvenience or widespread heavy economic loss for too many individuals or group of persons. Violations will be very blatant if there are inadequate detection and policing systems. Hence, some automatic or self-regulating enforcement mechanism is necessary for the proper implementation of such laws. In the absence of adequate inspection and enforcement, anti pollution laws will not be adhered to until they provide direct benefits for the potential violators offsetting the expense of compliance.[47]

Proper observance of antipollution laws becomes more difficult when it involves financial sacrifice.[48] In some cases, an inevitable result of such laws is that some industries even has to stop their production. Because, the installation of pollution control equipment will mean increased costs of production and lower profits. The economic losses necessitated by pollution control mechanism are usually weighed against the possibility of having to pay a legal fine for violation of the pollution law. So when the fines are very low and the costs of pollution control are very high, the laws will be enforced so poorly that polluters frequently prefer to continue with their violations.

(B) Control of Pollution Through Subsidization

To raise the likelihood of compliance among polluters to implement antipollution laws, it is necessary to give them some kind of subsidy. Such subsidy could take the form of tax credits also. However, in some cases the polluter could be provided with supplemental funds that would otherwise not be available to him. The governmental subsidies may take the form of loans and grants to eliminate pollution.

There are many different kinds of tax credit that may be available for industrial polluter.[49] For example, a more rapid write off may be allowed of the cost of industrial pollution treatment equipment from profits. Some tax jurisdictions may go further and permit a deduction from the tax base if such equipment is purchased.

However, between a tax credit for investment in pollution control and a subsidy for the same purpose, this author would prefer the tax credit, because a subsidy for investment tends to discourage the use of other pollution control techniques. For example, in some cases instead of a capital expenditure for some pollution control device, air pollution might be better controlled by switching to nonpolluting fuels, that is, from coal to gas. This author also fears that the use of subsidies to prevent pollution could lead to a kind of gamesmanship on the part of polluters. By pretending to open up new and dirty blast furnaces, some industrialists may be able to coerce payments for projects they did not really intend to build. Thus subsidies may not be warmly appreciated by other the payers, who may recent the diversion of their funds to the private use of industrialists.

(C) Control of Pollution through Incentive Pricing

A third and somewhat novel solution is to utilize a system of economic incentives so that the polluter is forced to come to terms with the social costs of his pollution. This is called 'internalization' — the creator of environmental disruption is made to bear himself (or internalize) the costs which previously he had passed on to society at large. Some economists rightly argue that only when the private costs of the polluter are also adjusted to include the social damage caused by his pollution will be willingly do his best to clean up his effluent.[50] However, depending on the nature of his pollution and the possibility of joint action with several polluters, the polluter can decide himself without the need of a government edict whether or not it is cheaper to clean up his own pollution or to join in some cooperative effort. Though there are formidable technical difficulties involved in implementing such a proposal, but it has considerable merit, at least as a supplemental measures along with legal regulation and governmental financial aid.

The assessing group must be able to calculate the damage created by a given polluter and charge be made in proportion to the damage created by the resulting air and water effluent. Once that information is calculated into the cost calculations of the particular producer, the system will be largely self-sufficient and self-correcting. The polluter will then have before him a tabulation of all his costs. If it is determined that his pollution has had no negative effect on the rest of the society, the producer can be allowed to operate as before. If damage has clearly been caused, then the polluter should be made to pay the extra costs for pollution control. Once the polluter comes to know the value of his damage, he has several choices:

(a) He can cut back production and thereby eliminate the pollution.
(b) He can instal control equipment himself — profitably — if the operating cost of the equipment plus amortization is less than he penalty he would have to pay for his pollution.
(c) If it is cheaper for him to pay the penalty than cut back or reduce his pollution, then he simply would pay the damage fees to an outside body which would in this way acquire income to finance its own pollution control.

(D) Best Practicable Means for Pollution Control

In deciding what solution of pollution control is to be applied in a particular process or an individual work, a balance has to be struck between the cost and benefits of pollution abatement for industry and society. Reasonably and most appropriately 'best practicable means[51] (6 pm) of pollution control is to be adopted and regard being given in this method, among other things, to local conditions and circumstances, current state of technical knowledge and financial implications. The bpm for a particular process or an individual work is formulated by the control agency after consulting with the particular trade associations, research organisations, the affected persons in the locality and the industry.[52]

In adopting bpm for controlling environmental pollution under the codified laws as well as for introducing meaningful environmental impact studies there need to be a strong inspectorate under the authority of the Pollution Control Board consisting of experts who can understand and find appropriate solutions for the problems as and when they arise. Really, such an inspectorate will be helpful in bringing the effected interests to a closer participation in the decision making process as well as also making the Board itself understand the problems in a more objective and realistic manner.

Thus in view of the realities of pollution control requiring a continuing balance between the costs and benefits of pollution abatement for industry and society, it may rightly be said that the bpm provides a flexible formula. The pollution control law, therefore, should provide for the bpm approach to pollution control and a strong infrastructure of an independent inspectorate.[53]

5. ENVIRONMENTAL MANAGEMENT AND DEVELOPMENT

In developing countries like India before the United Nations Conference on Human Environment in 1972 in Stockholm, the dominant thinking was that the demands of environmental management were fundamentally antithetical to development.[54] Such management was actually seen as a major constraint in the attempts to achieve rapid economic growth and increased productivity. Further, it was asserted that environmental problems created by the development process were simply part of the cost which developing countries had to pay in order to raise the standard of living of their growing population. Thus, the developing countries in their national efforts to ugment the economic development had generally ignored the environmentally adverse consequences of that process. The main consideration has been to create avenues for generating foreign exchange and employment for their growing population.[55]

In our view, there is no conflict between environmental management and development because, ultimately, both are meant for ensuring that present and future generations must enjoy decent living standards. Rather, environmental management is imperative for rational development. A development process that ignores the ecological dimension ultimately undermines the quality of life of a country's population and its future development capacity.

The process of economic development and transformation entails exploitation of natural resources of a nation, which if indiscriminate may result in depletion of those resources to the extent thereby compromising not only the ecological balance but also the quality of life now and in the future. In the long run, indiscriminate exploitation of natural resources may even impair the nation's very development capacity. Environmentally degrading consequences of the development process are generally[56]:

(*i*) irrational land use practices may result in soil erosion with adverse impact on soil fertility and water quality;

(*ii*) use of fertilisers and pesticides for increased agricultural production pose the danger of water pollution through chemical residue with possible harmful impact on human health, plant and animal life;

(*iii*) the process industrialisation leads to generation of deleterious by-products whose effect for environmental degradation is immense — the production of effluents without proper treatment and disposal mechanisms, the uncontrolled emission of fumes and particles by factories undermine human, plant, animal life and thus upset delicate ecosystem.

Now the question arises: How to achieve development without impairing the quality of environment. Whereas market forces have historically contributed to the irrational exploitation and processing of basic natural resources, they have also been found completely incapable of anticipating and controlling the adverse consequences of those processes.[57] Hence, the imperatives of development in the Third World dictate a revamped role of the state. Its agenda should be the formulation and implementation of policies, programmes in such a manner that will mediate to strike a proper balance between the process of economic transformation for development, the demands for rational exploitation of natural resources and a sound environment. The concept of environmental management therefore, means all measures taken by the state to:

(*i*) regulate the use and development of natural resources: and
(*ii*) anticipate and control the environmentally adverse consequences of the development process.[58]

In most of the developing countries, the environmental management has received only cursory attention and that is so because of the following two reasons:

First, development has been conceived in terms of mere rapid economic growth and increased productivity whereas an improved quality of life for the public at large has been ignored.[59] In this context 'environmental management' has been taken to mean as a constraint on 'development' because of its supposedly onerous restrictions upon the actors in the development process. Hence, exploitation of natural resources goes without rational resources management policies and programmes.[60] Similarly, industrialisation takes no count of the effect of industrial processes on the economic system and little attention is paid for anticipating ecological costs, side effects of development projects and programmes or for incorporating such considerations in the development planning process.[61]

Second, the effects of environmental degradation, generally, do not appear immediately, but are long term consequences in most cases. On the other hand, demand for economic growth and development is immediate. It is partly due to this disparity that the problem of developing countries is how to achieve rapid economic growth and not how to deal with the consequences of that process.

Thus the fallacy, generic in the all developing countries, that environmental management is a constraint on development is a consequence of 'development' patterns and ideas whose primary objective is the realisation of short-term economic gains only.

6. ROLE OF ENVIRONMENTAL LAW IN DEVELOPMENT

Environmental law has a very important role to play in the development process.[62] It ensures the incorporation of environmental considerations in development planning on ecologically acceptable lines. Thus the wider role of environmental law in this context is three dimensional.[63]

(*i*) It can provide institutional mechanisms for the allocation of natural resources, norms regulating development and the use of those resources and normative structures for environmental management. Thus the primary concern of the law at this level is to ensure that development and use of resources are accompanied with appropriate management measures which will preempt waste and the environmental degradation resultant upon waste.

(*ii*) It can fix normative standards and provide sanctions in respect of:

(*a*) the disposal of the waste by products of the development process; and

(*b*) the sale and use of new technology in the production process. The main and appropriate objectives at this level are, first, that the waste by-products are subjected to appropriate waste treatment processes before being discharged into the environment and, second, that the introduction of new technology in production does not impair the quality of the environment.

(*iii*) It can provide anticipatory mechanisms for environmental impact assessment for anticipating and pre-empting the environmentally adverse consequences of the development process.[64] The mechanism ensures that ecological costs and side-effects are properly considered in appropriate decision making processes. The law, at this level, creates institutions and confers powers on them to examine the nature of proposed development projects, assess their probable impact upon environment and ensure that appropriate and adequate measures for environmental protection are built into such projects before they are executed. Thus environmental law can play an important role in development process and in preventing degradation of environment and consequent erosion of our natural resource base.

7. A PLEA FOR TEACHING ENVIRONMENTAL LAW

The growth and development of Environmental Law and Urban Law have been influencing considerably our notions of individual freedom to own and use private property.[65] Today property is more of a liability and entails a social responsibility too onerous to discharge. To achieve national goal of economic development, social control of ownership of private property is required. Hence, Environmental Law imposes a number of restrictions on the ownership and use of private property. It is indeed very surprising that Law Faculties in our country have been ignorant of developments of such a far reaching importance.[66]

Mr. Justice Muthuswami Iyer had regretfully pointed out the poverty of the legal curricular as early as in 1885 in the following words:—

> "Law is hitherto studies in this Presidency more as an art founded on certain arbitrary and technical rules than as a science which consists of principles laid down for protecting human interests in various life relations."[67]

The importance of teaching a course on environmental law in the Indian Universities should be appreciated by all concerned. The menace of pollution of air and water in industrial towns is assuming dangerous proportions. The need to curb and control the menace of pollution has been universally accepted. It has also been universally recognised that law only can provide the effective solution to curb and control the menance of pollution. Hence, to ensure full implementation and effective enforcement of the pollution control law, it is necessary to impart meaningful and worthwhile education of the subject to as to train a cadre of personnel fully aware of the dynamics of law in this area.

In India, the importance of the environmental hygiene has been realised quite early.[68] In June 1948, the Ministry of Health of the Govt. of India had appointed the Environmental Hygiene Committee with wide ranging terms of reference. The Committee submitted its report in 1950 and made very significant recommendations, inter alia, on the following aspects.[69]:

(a) Town and village planning
(b) Water supply
(c) Collection and disposal of community wastes
(d) Light and air
(e) Pollution of streams, lakes and beachess

(f) Industrial environment

(g) Hygiene of the rural environment.

It also suggested adoption of suitable measures for organisation and administration of the control machinery and for training the personnel to make the pollution control and environmental hygiene programme a success.[70] Since then a large number of relevant legislations have been enacted.[71] and also there is another significant development which elevated the national concern for pollution free environmental to the Constitutional status.[72]

It is in this background that teaching of environmental law in Indian universities is very necessary. Law curriculum needs to be redrafted, so as to include environmental law at LL.B. and LL.M. stages. In LL.B. classes a suitable place can be given by teaching it either as optional paper or along with the paper on the law of torts.[73] At the LL.M. Stage this paper can be taught as optional. Thus the traditional private client oriented law curriculum must now be broadened to include greater emphasis on public and environmental law. University Law Departments should now establish better links with the environmental and social sciences so as to encourage their students to seek better training in these and other relevant subjects. The scope of environmental law needs to be clearly defined.

Further, it is earnestly urged that the Bar Council of India should formulate a model syllabi covering various aspects of environmental law with the aim to include in the syllabi not only local statutes as a part of the municipal law but also to cover related aspects of international and comparative law. The further details of the aspects of be covered for teaching could be worked out and decided by each University keeping in view the local needs of the State. Environmental law is probably the most important area throwing unlimited challenge to the student of the day.

The Faculty of Law of the University of Saugar has already taken up the matter of teaching environmental law. Special paper on environmental law is required to be written in LL.B. Part III and a proposal is already on record to teach environmental law along with law of torts. At LL.M. level, there is already a full fledged paper on environmental law.

University of Cochin, Department of Law has introduced environmental law at LL.M. level. Environmental law was made an optional paper under administrative law specialisation in the LL.M. course from the year 1980 onwards. Research in environmental law is also in progress. Similarly, the doctoral programme is going on in many other universities of the country.[74]

The Banaras Hindu University offers environmental law as a paper even at the LL.B. stage. This was introduced as a part of the LL.B. curriculum in the 1970s and in 1978 at the LL.M. level too.

It is indeed gratifying to note that the Government of India realising the importance of the subject has created a separate department for environment and ecology in 1980 and the integrated Ministry of Environment and Forests in 1985 and is initiating measures to teach a course on environmental law and this is an appreciable trend for the country.

Recently, the UNESCO is likely to put out a common core curriculum for environmental education in all the member States,[75] it was indicated at an international consultation meeting organised in New Delhi by NCERT in cooperation with UNESCO and the International Education Programme (IEEP) from April 18-23, 1990. More recently, the Bar Council of India has introduced 'Environmental Law as a compulsory subject in LL.B. courses throughout the country from the Academic Year 1998-1999. Further, the Bar Council of India has directed that the Curriculum Development Centre Report (1988) commissioned by the UGC may be followed by the Universities while preparing the syllabi for the various courses of LL.B. classes.[76]

8. PROPOSED SYLLABUS FOR TEACHING ENVIRONMENTAL LAW AT LL.B. LEVEL[76a]

Unit-I (10)[77] Environment : Concept and Issues

1. What is environment? Air, Water, Land, Sunshine, Flaura and Fauna; its importance as life-supporting systems.
2. How is it important for human survival? Scientific Evidence-Interdisciplinary nature of the subject.
3. How does environmental degradation occur? "Environmental Problem", Nature and Dimensions;
4. (*a*) Air (*b*) Water (*c*) Soil (*d*) Noise (*e*) Human Settlement System Green House Effect-Ozone layer depletion-Nuclear Wastage-Environment Impact Assessment.
5. What are the effects of various types of environmental pollution on health?
6. What is 'sustainable development, 'Ecological balance' — Examples. Movement from "Pollution Control" to "Ecological Management".

Unit-II (15) Environment and the Law : National and International Perspectives.

1. Environmental policies of ancient societies — Man and Nature in Indian Jurisprudence-Lessons for Environment Planners.
2. Common Law remedies against environmental Pollution — (*a*) Tort Law (*b*) Industrial Law (*c*) Criminal Law
3. Indian Constitution and Environment Protection — Fundamental Rights and Duties —Environment Policies of Government.
4. International concern for environmental protection — U.N. initiatives — International Law and standards.
5. Proposals for global co-operation and their status and strategies for adoption in law.

Unit-III (2) Legal Enforcement of Environmental Norms and standards

1. Water Pollution — Law and Administration.
2. Air Pollution — Law and Administration.
3. Land use controls for prevention of environment degradation.
   - (*i*) Forest policy and law.
   - (*ii*) Fisheries and Wildlife management through law.
   - (*iii*) Human settlement laws in urban and rural areas.
   - (*iv*) Agricultural diseases control through chemicals and pesticides.
   - (*v*) Mining laws and management.

4. Noise pollution and legal responses.
5. Nuclear energy development and legal controls.

Unit-IV (15) Towards Environment — Friendly Development : Role Law and Policies

1. Strategies for better enforcement of environment laws.
2. The Environment Protection Act, 1986 and its enforcement.
3. The Consumer Protection Act in Environmental Management.
4. The Public Liability Insurances Act in Support of Environmental Protection.
5. Constitutional Jurisdiction in environmental regulation.
6. Fiscal and monetary measures to protect environment.
7. Voluntary social action and role of law in environmental protection — Awareness building, social mobilisation.
8. International enforcement : technology, cost and Co-operation.

Reading List :

1. Books.
2. Reports.
3. Judicial Decisions.
4. Articles and Research Notes.

9. REVIEW

From the foregoing discussion the conclusion emerges that the next hundred hundred years may evolve into the century of the environment — during which most societies shift from guns and butter to butter and trees. However, all this comes not a moment too soon, if we are to save a failing planet.

Environmental consciousness as we know today took shape in the late 1970s and early 1980s.[78] At that time the Third World was only tangentially aware of the perilous effects of large-scale industrialization, modernization and high technology fixation. The developing countries have modelled their developmental processes on the structures prescribed by the West — an addiction that has become so difficult to give up. They have been criticised for this and told to share the responsibility for environmental destruction. Nevertheless, one cannot absolve the advanced countries of blame for their role in creating the morass in which environment finds itself. Their concern for environmental balance is no doubt reflected in phenomena like the British Green Party winning 15 per cent of vote in the 1990 national elections to the European Parliament (Strasbourgh, France). But critics feel that since 30 per cent of the population in the developed countries consumes 70 per cent of the world's resources, and since 40 per cent of the 29 million tonnes of carbon dioxide and other 'green house' gases thrown into the earth's atmosphere every year come from North America and Europe, the developed countries should contribute in more concrete terms to the protection not only of their own environment but of the entire world.

Unfortunately, the developed countries have not taken the things quite this way. They have today doubled their efforts to sanitize their own atmosphere as they increasingly feel the civil impact of global warming. Yet their governments and giant companies and agencies funded by them are constantly pushing the Third World into energy intensive path of development by encouraging dependence of fossil fuels or by providing financial help to such mega projects as the Tehri Dam or Sardar Sarovar (Narmada) project in India. Similarly, the Third World countries, hard pressed for foreign exchange as they are, have generally allowed the depletion of their forests to fulfil the needs of advanced countries. For example, in Brazil the evergreen rain forests have been razed to the ground to set up pastures for cattle which provide cheap beef for the North American fast food chains and charcoal for smelting local iron for export.

Despite the resistance offered by the anti-environmental movement both in advanced as well as developing countries, committed environmentalists, conscious politicians and concerned intellectuals have been able to win certain battles. The signing of Montreal protocol in 1987 and the bending of the advanced nations to the demands of the Third World to phase out CFCs (the so-called chemicals of prosperity) at the London Conference on environment in June 1990 and the holding of Eco 92 Public Forum in New Delhi in Sept. 1990 as a prelude to the UN Conference on environment which was held in Brazil in 1992, have shown that the citizens of the world cannot remain silent any longer.

The Indian action for the setting up of 'environmental courts' to deal with anti-green crimes has also evoked great attention.[79] The Indian government has recently set an example for other Third World nations by imposing a fine of Rs. 1 crore on one of its own agencies — the Oil & Natural Gas Commission (ONGC) for violating the Environmental Protection Act at its drilling site in West-Champaran (Bihar). The people of the developed world have also woken up not only to their specific problems but have shown great interest in the problems of the developing countries. For instance, some Japanese NGOs who having been successful in forcing their government in Tokyo to withdraw funding of India's Sardar Sarovar Project, have now turned to the World Bank for the same.

However, according to a study conducted by the non-profit Institute for Energy and Environmental Research, the chemical methyl chloride has not yet been regulated by the international agreement signed in London in June 1990 to phaseout chlorofluoro-carbons and other ozone-depleting industrial chemicals. Hence, we need additional steps to protect the ozone layer and some of these steps should involve the reduction of methyl chloride emissions. Today, the methyl chloride is the largest unregulated source of ozone-depleting chlorine.

Environmental problems at the global and national levels as explained earlier, centre on human activities which adversely affect the atmosphere, oceans and land, ranging from global warming and ozone depletion, to deforestation and soil erosion, contamination of fresh water resources and urban air pollution.[80]

In the international conventions and venues in relation to environment, the developed nations have emphasised more the broader issues such as global warming, biodiversity and ozone depletion etc. Whereas many developing countries have been more concerned about issues such as soil erosion, water pollution, urban air pollution and desertification, which impinge on the relationship between environment degradation and poverty.

Concern over the need to integrate environmental and development issues has been felt in a range of international conferences and reports, including the UN Conference on the Human Environment in Stockholm (1972), the publication of World Strategy (1980) and Our Common Future (1987), Caring for the Earth: A Strategy for Sustainable Living (1991), and UN Conference on Environment and Development (1992). The official product of the Earth summit (1992) resides in five agreements embracing: the Framework Convention on Climate Change, the Convention on Biological Diversity, Agenda 21, The Rio Declaration and the Forest Principles. The goals of the 1992 UN Earth Summit at Rio Marked a turning point in international thinking not only on the environment but also the internationship of poverty, economic growth and environmental degradation.

Various branches of United Nations have played a major role in initiating policies on sustainable development. The rise of the Global Environmental Facility, represents an attempt to bring about collaboration, on financing global environmental problems, between the World Bank, the UN Development Programme (UNDP) and the UN Environment Programme (UNEP). The role of international institutions and international venues in initiating sustainable development can not be divorced from the political economy of the development process.[81]

The negotiators breathed a heavy sigh of relief when the 11 day negotiations during Kyoto Conference in Japan on greenhouse gas emission cuts came to an end on Dec. 1, 1997. The Conference attended by 160 countries and over 300 NGOs, turned out to be a historic one with member countries signing a major global emission reducing agreement. It is for the first time in history, the world has committed to roll back emissions of carbon dioxide gas and five other earth-warming pollutants below 1990 levels, Of the proposed overall cut of 5.2 per cent, the US has agreed to cut greenhouse gas emissions by seven per cent, Japan by six percent, and the Union of European by eight per cent below 1990 levels, between the years 2008 and 2012.

However, the US Senate has made clear than without "meaningful" commitments from developing nations, it would not ratify a global warming treaty. The United States did win the right to keep in the treaty so-called 'Emission Trading', at least in principle. The furious debate over Emissions Trading was the worst of the meeting, with China saying it involved "human rights" and the US insisting it was essential. The developing world fears rich countries could sidestep emissions reductions by buying pollution rights through the trading mechanism. Under the plan, a country can buy the unused portion of another nations emission limits to technically lower its own levels.[83]

The highlights of Kyoto Summit (1997) are:

(*i*) Commits nations to rolling back emissions of 6 greenhouse gases.[84]
(*ii*) Reduction to be attained in a time-frame of 2008 to 2012.
(*iii*) US to reduce emissions to 7% below 1990 levels; Europe to cut back by 8% and Japan by 6%.
(*iv*) Twenty-one other industrialised countries will meet similar binding targets over same time-frame.
(*v*) Industrial nations can trade 'emissions quotas' among themselves.
(*vi*) US fails to extend binding commitments to developing countries a provision that would have allowed Third World nations to opt in under mandatory reductions.

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2. See R.K. Pachauri, "Planet Fund: Polluter must pay", The Hindustan Times, October 16, 1989, p. 13; See also, Our Common Future: Report of the World Commission on Environment and Development, 352 (1987). This World Commission on Environment and Development was set up as an independent body in 1983 by the United Nations. Its main task was to fashion "(*a*) global agenda for change", which would ensure that human progress would be sustained through development without bankrupting resources of future generations; Attar Chand, Environmental Changes: A Global Survey (UDH, Publishers, New Delhi: 1985); T.N. Khushoo, Environmental Concerns and Strategies (Natraj) Publications, Dehradun, 1984); see also Karan Singh, "Strengthening Global Consciousness", The Hindustan Times (Sunday Magazine), January 21, 1990, p. 9; Pramit Pal Chaudhury, "Global Warming", The Sunday Statesman, August 5, 1990, p. 1; C.S. Nambiar, "The Green House Effect: Will We Survive Another Century", The Tribune, August 26, 1990, p. 4; Taru Bahl, "Expanding Environmental Horizons", The Tribune, December 7, 1977, p. 2.

3. For Example, CFC 11 lasts for 75 years, CFC 12 for 110 years, CFC 113 for 90 years, halon (used for fire fighting) 1301 for 110 years.
4. See press report, "Pole Ozone Hole Cracking Up", Indian Express, December 13, 1989, p. 7; see also David A. Wirth, "The Green House Effect", The Tribune (Sunday Reading), January 14, 1990, p. 1; "Global Warming: The Issue Hots Up", The Express Magazine, July 8, 1990, p. 3.
5. The mass of the layer from the earth surface upto ten miles is called troposphere. About the troposphere i.e. from ten to thirty miles is the layer which is nammed as stratosphere.

5a. The latest evidence gathered by UNEP reportedly suggests that the Ozone levels in the lower atmosphere are growing at a level which are aggravating the 'Green house effect'. See S.C. Gangal, "Environmental Impact on Mankind", The Hindustan Times, November 27, 1989, p. 11; Satish Jha, "Global Lobbying to save Environment", Hindustan Times, August 4,1989, p. 11; K. Subrahmanyam, "Green house' Politics", The Hindustan Times, October 6, 1989, p. 13 R.K. Pachauri, "Greening of Politics", The Hindustan Times, March 22, 1990, p. 11; see also A.A. Shiralkar, "Earth's changing Atmosphere", Indian Express, March 19, 1991 p. 1 and 4; S.H. Venkataramani, "No Serious Effort to Check Global Warming", The Hindustan Times, March 17, 1998, p. 13.

5b. See for example, in 1954, a nuclear bomb was tested by the United States in the Pacific area, it reportedly caused widespread radiation sickness among a large number of Japanese fishermen and over 80 per cent of children living on the island of Rongelap developed thyroid growth of an intractable nature.

5c. Dhirendra Sharma, "N-waste Hazards", The Hindustan Times, January 4, 1990, p. 11; See also David Robie, "Perils of Toxic Colonialism", Indian Express, May 5, 1990, p. 6.

6. See for example, in Japan the persistent use of pesticides and chemical fertilizer has poisoned land and water surrounding major cities. And, there is very substantial and larger international dimension to the use of chemical fertilizers and pesticides.

6a. For detail of CR system, see S.N. Kak, "Nuclear Techniques in Pesticide Release", Indian Express, September 4, 1990, p. 3; According to an agriculture scientist, banning of pesticides and reverting organics farming is no solution to pesticide contamination", see The Tribune, April 4, 1998, p. 6.

7. Over half the members of the Commission were from the developing countries.
8. Our Common Future: Report of the World Commission on Environment and Development (1987), p. 352 (hereinafter cited as the Brundtland Report).
9. Ibid: see also G.J.A. Ojo, "Environmentally Oriented Industrial Planning" in D.M. Dworkin (ed), Environment and Development (1974), p. 186; A.L. Gore, "The Ecology of Survival", The Tribune, March 18, 1990, p. 1.
10. Ibid. at 46.
11. See for example, Stockholm Conference on Human Environment, 1972; International Convention for the Prevention of Pollution from Ships, 1973. Most of such agreements have been signed since the early seventies. The World Climate Protection Treaty (1992) U.N. Conference on Environment and Development, Rio De janeiro 3-4 June, 1992.
12. See K. Subrahmanyam Supra note 5a.
13. Satish Jha, "Global Lobbying To Save Environment", The Hindustan Times, August 4, 1989, p. 11; see also Ravi Agarwal, "Waste Trade: Who gains", The Tribune, October 12, 1997, p.7.

14. See D.D'Monte, Temples or Tombs? Industry versus Environment: Three Controversies (1985), p. 219.

15. See A.R. Kasdan," The Third World-Ward War—Environment versus Development", Record of the Bar Association of City of New York, 26 Vol. (1971), p. 454; United Nations, Development and Environment (1971).

16. Rashmi Mayur, "Playing Havoc with Earth's Protectives Umbrella", The Indian Express, April 4, 1989, p. 1; George Chakka, "UNIDO Waging Relentless Battle to Halt Ozone Depletion", The Hindu, January 5, 1998, p.10.

17. K.S. Gurmit Singh, "The Depleting Ozone Layer", The Indian Express, March 25, 1989, p. 8. However, it may be noted here that India Produces only 7,000 tons of CFC annually.

18. R.K. Pachauri, "Planet Fund: Polluter Must Pay". The Hindustan Times, October 16, 1989, p. 13; see also Attar Chand, Environmental Changes — A Global Survey, UDH, Publishers, New Delhi, (1985), p. 149; "Environment Fund", Hindustan Times, June 25, 1990, p. 11; The Global Environmental Facility (GEF) established in 1991, was designated as the financial mechanism for the Convention on Biological Diversity as well as Convention on Climates Change, see The Tribune, January 29, 1998, p. 7.

18a. U.N. Conference on Human Environment, Stockholm, 1972; U.N. Conference on Environment and Development, 1989; Our Common Future; Report of the World Commission on Environment and Development, 1987; Montreal Protocol on Substances that Deplete the Ozone Layer, 1987; Legal Principles for Environmental Protection and Sustainable Development adopted by WCED Experts group on Environmental Law, 1987; U.N. Conference on Environment and Development, Rio De Janeiro 3-14 June, 1992.

18b. Md. Zafar Mahfooz Nomani, Law Relating to Environmental Liability and Dispute Redressal: Emergence and Dimension", XI Alig. L.J. 85-126 (1996); see also Organisation of Economic Cooperation and Development (OECD), The Polluter-Pays Principle, (1975), OECD, Council Recommendation on the Application of the Polluter Pays Principle to Accidental Pollution, (1989).

19. *U.N. Chronicle*, September 1992, p. 62.

20. See, "Our Planet Battling for Survival", *Civil Services Chronicle*, August 1992, p. 8.

21. "Survival of the Earth: Commitment at Rio", *Manorma Year Book*, 1993, pp. 98-104.

22. Ibid.

23. "A Consensus Study at Rio" Indian Express, Chandigarh, June 15, 1992.

24. "Rio Deadlock Over Funding Mechanism", Indian Express, Chandigarh, June 8, 1992.

25. "Rio Summit : North South in for Confrontation" Indian Express, May 27, 1992.

26. Ibid.

27 "Survival of the Earth: Commitment at Rio", Manorama Year Book, (1993), p. 100.

28. "Can the Earth be Saved", Indian Express, New Delhi, June 7, 1992.

29. Ibid; see Sampooran Singh, "Earth Summit: Unexplored Dimension", in V.S. Mahajan (ed.) Environment Protection, 1993, pp. 57-62.

29a. "Enforce Emissions Strictly : India", The Hindustan Times April, 4, 1998, p. 12.

30 See 18 Encyclopaedia, 181 (1970); See also S.C. Srivastava, "Environmental Management, the Economic Times, August 23, 1987, p. 5; B.B. Vohra, "Managing Environment", The Economic Times, July 2, 1987, p. 5; V.K.S.

Varadam, "Management of Environment", The Tribune, July 17, 1988, p. 4; R.K. Sharma, "Environmental Management", The Economic Times, February 7, 1989, p. 5; G.H. Adirajaiya, "Managing the Environment?" The Economic Times, September 4, 1987, p. 5.

31. See According to Section 2(a) of the Environment (Protection) Act, 1986, the term "*environment* includes water, air and land and the inter-relationship which exists among water, air and land and property". Similarly, "Ecology is the scientific study of the relationship of living organisms with each other and their environment", see P.D. Sharma, Ecology And Environment, 1991, p. 1.
32. Paras Diwan (ed.), Environment Protection — Problems, Policy, administration, law, (Deep and Deep: New Delhi, 1987); Report of the Committee for Recommending legislative Measures and Administrative Machinery for ensuring Environmental protection. (The Tiwari Committee's Report), Department of Science and Technology, Govt. of India, 15th Sept., 1981.
33. According to S.2(c) of the Environment (Protection Act, 1986), "*Environmental Pollution means* the presence in the environment of any environmental pollutants and "environmental pollutants means any solid, liquid or gaseous substance present in such concentration as may be, or tend to be injurious to environment.
34. Marshal I. Goldman, Ecology and Economics: Controlling Pollution in the 70s, (Prentice Hall, Inc.: New Jersy, 1972), p. 5; See also T.O. Riodan, Environmentalism, London, Pion Limited, 1981; Francis Sandbach, Environment, Ideology and Policy, Oxford, Basil Blackwell, 1980.
35. The State of India's Environment 1982 — Citizens' Report (unpublished by the Centre for Science and Environment, New Delhi).
36. The simplest definition of pollution may perhaps be "right thing in the wrong place", e.g., salt in the sea is not pollution but salt in the river is a pollution. Thus the pollution is the breach or disturbance in the balance of nature.
37. The Environment (Protection) Act, 1986, S.2(b).
38. O.D. Barros, "Saving Our Eco-system", Indian Express, April 4, 1987, p. III.
39. See G.P. Tripathi, "Ecosystem, Pollution and the Man", (1984) C.U.L.R. 59 at 61; see also Taru Bahl "Expanding Environmental Harizons", The Tribune, December, 7, 1997, p. 2.
40. Chandra Pal, "Statutory Control of Water Pollution: A Piece-Meal Approach To Pollution Control", in Paras Diwan (ed.), Environment Protection, 1987, p. 258.
41. Article 246 (1).
42. Article 246 (2).
43. Article 246 (3).
44. In view of this Article, in 1965 the Centre urged the State Legislatures to pass a resolution authorising the Parliamentary to make laws on water pollution control. Although this power was given in 1969 but the Water (Prevention and Control of Pollution) Act was passed in 1974.
45. The Parliament enacted the Air (Prevention and Control) — of Pollution) Act 1981 and The Environment (Protection) Act, 1986 in view of this Article.
46. For example, section 12 of the Factories Act 1948 requires all factories to make "effective arrangements" for waste disposal and empowers state governments to make rules for implementing this broad directive.
47. See for example, when traffic policeman is not around, traffic laws are usually observed even though this means a delay, because failure to do so may lead to automobile accidents.

48. See J. Clarence Davies, The Politics of Pollution (New York: Pegdsus 1970), p. 38.
49. See Industrial Incentives for Water Pollution Abatement (New York: Institute of Public Administration, February 1965), Chapters, VI -VII.
50. See Sanford Rose, "The Economics of Environmental Quality", in Marshal I Goldman (ed.), Ecology And Economics: Controlling Pollution in the 70s, (1967), pp. 149-166.
51. 'Best Practicable Means' called bpm, is a method of pollution control based on a cost-benefit analysis. See Control of Pollution Act, 1974 of Great Britain, S. 72 (1).
52. Ibid.
53. The Control of Pollution Act, 1974 of Great Britain can be taken as a model. It deals with waste disposal and control of water, noise and atmospheric pollution.
54. See A.R. Kasdan, "Third World War — Environment versus Development" 26 Record of the Bar Association of the City New York, (1971), p. 454; U.S.A.I.D. (N.S.P., Legal Regulatory, and Industrial Aspects of Environmental and Natural Resource Management in Developing Countries, (1981), pp. 1-2.
55. Farvar and Milton (eds.), The Careless Technology: Ecology and Economic Development (1972), p. xiii.; N.S. Randhava, "Towards Sustainable Development", The Tribune, November 15, 1997, p. 10; Kamla Chowdhry, "Give Economics Human Face", The Hindustan Times, March 8, 1998, p. 13.
56. Bondi Di Ogolla, "Role of Environmental Law in Development", 29 J.I.L.I. (1987), pp. 187-89; see also Desh Bandhu, Environmental Management (Natraj Publishers, Dehradun, 1981).
57. See A.V. Keese, Economics and the Environment (1977).
58. See Bondi D. Ogolla supra note 56 at 188.
59. Whereas the 'development in the context of a sound environment denotes three things: first, improvement of the society's quality of life; second, dynamism, resilience and regenerative capacity of economic institutions and natural resources for the benefit of present and future generations; and third, the democratisation of political forces. See *ibid*.
60. See for example, C.O. Okidi, "Management of Natural Resources and the Environment for Self-Reliance", 14 Journal of Eastern Africa Research and Development, (1984), pp. 92-110.
61. Farvar and Milton (eds.) The Careless Technology: Ecology and Economic Development (1972), p. XIII.
62. See G.K./U.N.E.P./U.N.D.P., Project on Environment and Development (1979), p. 24.
63. See supra note 56 at 189-90.
64. See generally, K.C. Sankaranarayanam, "Tools and Techniques in Evaluating Environmental Impact", C.U.L.R. (1984), pp. 28-42; Garry Bates, "Environmental Impact Assessment: The Australian Experience", Journal of Planning and Environment Law, (1979), p. 731.
65. See M.L. Upadhyaya, "A Plea for Teaching Environmental Law", in Paras Diwan (ed.), Environmental Protection, (1987), p. 507.
66. *Ibid*.
67. Quoted in the Bombay Legal Education Committee Report (1949), p. 17 and also in Government of India, Ministry of Law, Law Commission of India, Fourteenth Report (1958), Vol. I, p. 520.

68. The Bengal Smoke Nuisance Act, 1905, was enacted to control smoke pollution.
69. For a brief summary of the Report, see Virendra Kumar, Committee and Commissions in India, Delhi, Vol. I, (1975), p. 55.
70. *Ibid.*
71. Statutory provisions aimed at protecting the environment are found in more than 200 Central and state laws. Further the laws to deal exclusively and comprehensively with environmental issues were enacted mostly in early 1970s. See The Wild Life (Protection) Act 1972; The Water (Prevention and Control of Pollution) Act 1974; The Forest (Conservation) Act 1980; The Air (Prevention and Control of Pollution) Act 1981 and the Environment (Protection) Act 1986.
72. Through the Constitution (Forty-second Amendment) Act 1976, Articles 48A and 51A were added. Article 48A was added to the directive principles of state policy and imposed on the state responsibility to protect the environment. Article 51A imposes a similar duty on all citizens.
73. It may be noted here that '*Bar Council of India*' went a step further in this regard and has introduced *Environmental Law* as compulsory subject in LL.B. classes throughout the country from *The Academic Year 1998-99*. See Bar Council of India, L.E. (cir. No. 4/1997) dated 21-10-97.
74. See for example, a 'Centre for Environment Education' was established at Ahmedabad in 1984 to devise education materials and curricula; Punjab University, Chandigarh has introduced 'Environment Education' as a subject in its affiliated colleges from the academic session 1998-99. See The Tribune, November 26, 1997, p.4
75. See "UNESCO Plan on Environment", Indian Express, April 24, 1990, p. 11.
76. *The Bar Council of India* has made it mandatory for the all Universities in the country to adopt and implement the new curriculum from the Academic Year 1998-99 in which '*Environmental Law*' has been made a compulsory subject in LL.B. classes. See The Bar Council of India, LE (Cir. No. 4/1997) dated 21st October, 1997.

76a. This syllabus was recommended for LL.B. level course on Environmental Law by Professor N.R. Madhava Menon in an International Seminar on "Environmental Protection: An Agenda for Interdisciplinary Approach" which was held from 23rd March to 25th March, 1991 in Law Faculty, Kurukshetra University, Kurukshetra. This syllabus was also approved by the seminarians.

77. The figures in the brackets indicate the possible class hours devoted to teach the syllabus of a particular unit.
78. See Rupak Dattagupta, "Consciousness of Environment", Indian Express, May 2, 1991, p. 8; Grigori Khozin, Talking about the Future (1988), p. 66.
79. See Environment (Protection) Act, 1986; Public Liability Insurance Act, 1991; National Environment Tribunal Act, 1995; In Indian Council for Enviro-legal Action vs. Union of Indian AIR 1996 SC 1446, the Supreme Court of India has nicely balanced the principle of absolute liability and polluter-pays principle.
80. See Sumit Roy, "Development, Environment And Poverty: Some issues For Discussion" Vol. XXXI No. 4 Economic And Political Weekly, (January 27, 1996, PE-29-31; see also 'On development and the environment crisis M. Redclift (1987), Sustainable Development: Explaining the Contradictions, Metheun, London; Development and the Environmental Crisis: Red or Green Alternatives? Metheum, London, 1984.

81. Sumit Roy, Ibid at 30; W.M. Adams and D.H.L. Thomas, "Mainstream Sustainable Development: The Challenge of Putting Theory into practice", 5(6) Journal of International Development, 1993.
82. P.S. Bright, "Climate Change Summit (1997): A Step to Save Earth", Science Refresher, February, 1998, p. 9.
83. Ibid.
84. The six greenhouse gases are: Carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, per fluorocarbons and sulphur hexafluoride.

CHAPTER TWO

Environmental Policy and People's Movement for Environmental Protection

1. INTRODUCTION

The tragedy at Bhopal in which more than 3300 persons were killed and about two lakh others affected in the world's worst industrial disaster on December 3, 1984, when deadly Methyr-Iso-Cynate (MIC) gas leaked in huge quantity from the Union Carbide's Bhopal plant.[1] On the other hand, the plight of the women in the village of Roli in western India, who spend 4-6 hours collecting firewood out of a total working day of 13-14 hours,[2] are palpable warnings of the environmental degradation which threatens every Indian citizen today.

Indeed, the major environmental problems in India which really threaten our society today are frightful in their range and severity.[3] On one hand, there are the problems we share with the Third World countries such as an acute biomass shortage which threatens to disrupt the life styles of a vast majority of rural households surviving in a biomass-based subsistence economy. On the other hand, we face the problems associated with an industrialised society such as air and water pollution, disposal of highly toxic industrial and nuclear wastes and acid rain etc.

Recently, with the increasing magnitude and range of environmental problems, the Central Government's policy has shifted from "environmental protection versus development" to "compatibility and interdependence of environmental protection and economic development." In the early 1970s, environmental protection was seen as a goal conflicting with development priorities.[4] While addressing the UN Conference on Human Environment in Stockholm in 1972, Mrs. Indira Gandhi the then Prime Minister of India clearly expressed this attitude when she asked: "How can we speak to those who live in villages and in slums about keeping in oceans, rivers and air clean when their own lives are contaminated at the source?" But, in the ensuing decade, India has actually developed a new attitude which recognises the compatibility and interdependence of environmental protection programme and economic development.

Thus the scope of this chapter is limited to study India's environmental policies and environmental movements with a view to review them and to make relevant suggestions for environmental protection and to ensure that human progress would be sustained through development without bankrupting the resources of future generations.

2. ENVIRONMENTAL POLICY

Policy is the sum total of the values which a person or a association of persons or institutions — legal, governmental and social — consider it as important in their relation with one another.[5] Hence, environmental policies have to be formulated in the crucible of social mores and values — the public opinion representing the view of both the elite expert and the lay public. Of all the values preservation of the natural and man-made environment is the paramount consideration on which environmental policy of a nation should be structured.

(A) Environmental Policy Under Five Year Plans

The environmentalist movement in India came up in the seventies and has assumed recognisable proportions during the eighties. The outlooks of the developed and developing countries towards environmentalism differed.[6] While environmentalists in the West had fixed their sights on the objective of upholding and promoting the quality of life, the governments and the vast majorities of people in the developing countries preferred the subsistence of the masses of poor people to the promotion of the quality of life of a few. However, the effects of environmental neglect first came to be perceived in the developed world, their experience is a pointer to the developing countries like India. Hence, in our developmental planning and efforts, we should not repeat the mistakes which marked the progress of the developed world. The patterns of growth that we adopt have to be imbued with the realisation that there are limits both in time and in space to the exploitation of the environmental resources.

The essence of sound growth and development lies in a happy blend of the realisation of the physical outer limits to the exploitation of environmental resources and the inner limits to human needs and aspirations. The whole exercise of growth with social justice aims at providing the millions of our country with at least the bare minimum of these necessities consistent with human dignity. Environmental policy in India has to be understood in this context. Environmental policy and solution adopted elsewhere cannot be applied uncritically to the Indian conditions. The qualitative and quantitative aspects of the pollution problems obtaining in India should be fully understood and environmental policies tailored accordingly.

Considerable damage has already been done to our environment — waterlogging and salination of agricultural land due to continuous irrigation and fertiliser use, desertification, over grazing of pasture land, denudation of forest areas leading to soil erosion and other ecological problems, pollution of rivers by industrial effluents, submergence of valuable forest lands by dams, the growth of slums and extinction of greenery due to over-urbanisation. There is no time to be lost in taking effective steps to ensure that these and other threats to environment are effectively tackled. Thus commitment to environmental protection need not necessarily militate against development or vice versa.[7]

There is no denying the fact that environment was not given high priority and sufficient recognition in the plans until 1968, but the importance of the subject had been realised quite early. It was in June 1948 that the Ministry of Health of the Government of India had appointed the Environmental Hygiene Committee with wide ranging terms of reference. The Committee submitted its report in 1950 and made significant recommendations, among others, on these aspects: town and village planning: water supply; collection and disposal of community wastes; light and air; pollution of streams, lakes and beaches; industrial environment; hygiene of the rural environment.

It was in the Fourth Five Year Plan (1969-74) when environmental issues were given high priority and were highlighted in the following words:

> It is an obligation for each generation to maintain the productive capacity of land, air, water and wild-life in a manner which leaves its successors some choice in the creation of a health environment. The physical environment is a dynamic, complex and inter-connected system in which any action in one part affects others. There is also the interdependence of living things harmonious development recognizes this unity of nature and man. Such planning is possible only on the basis of a comprehensive appraisal of environmental issues, particularly economic and ecological. There are instances in which timely, specialised advice on environmental aspects could have helped in project design and in averting subsequent adverse affects on the environment, leading to loss of invested resources. It is necessary, therefore, to introduce the environmental aspect into our planning and development. Along with effective conservation and rational use

> of natural resources, protection and improvement of human environment is vital for national well-being.[8]

The Draft Fifth Five Year Plan (1974-79) laid emphasis on having close association of the National Committee on Environmental Planning and Co-ordination (NCEPC) with all important industrial decisions so that environmental goal could be achieved. The NCEPC will co-ordinate efforts to develop standards for the emission of pollutants and other facilities to monitor them. To provide research into environmental and ecological problems, a number of research schemes have been funded by the NCEPC. In the context of protection and improvement of environment, the plan stressed that there should be a dynamic programme to develop forestry and improvement of degraded forests. According to the plan, the special efforts will have to be made to undertake project formulation in the forestry sector and strengthening of State Forest Departments. As regards industrial development and environment the plan states:

> It has to be ensured that the pursuit of developmental goals does not lead to reduction in the quality of life through deterioration in environmental conditions. It is, therefore necessary that in the rational development of industrial activity and in the utilisation of natural resources, due weight is given to the impact of such activity on the environment.[9]

Under the plan, the programmes such as rural health and nutrition, drinking water, provision of housing sites, slum improvement and rural education were implemented on priority basis so as to minimize environmental pollution throughout the country.

There was a separate chapter on "Environmental Planning and Co-ordination" in the Sixth Draft Five Year Plan (1978-83) in which dire need of environmental protection was felt and it considered environmental conservation as the very basis of all development. The sixth plan document has highlighted the causes of environmental deterioration and stressed for a need to control these as follows:

> As long as human numbers were limited and the capacity of the environment to withstand its over-utilisation was not stretched to a point of no return as it were, man neglected the environmental impact of economic activities. However, with the discovery of residues of toxic chemicals (including pesticides and detergents) in humans and animals, the increasing incidence of diseases attributable to man-made pollutants, and appearance of signs of irretrievable damage to natural life supporting systems like the soils, waters and the air, showing up for example in problems of water-logging and salinisation ac-

> companying irrigation projects, siltation of reservoirs etc. realisation began to down that human activities which impinge upon the natural environment, need to be carefully controlled.[10]

Similarly, anticipating the Brundtland Report, the Approach Paper to the Seventh Five Year Plan (1985-90) states:

> The degree to which a nation can prosper depends upon its productivity, which is the efficiency with which it is able to utilise the resources of the environment to satisfy human needs and expectations. If the gains in productivity are to be sustained, resources must also continue to be available over time. This requires that, while providing for current needs, the resources base be managed so as to enable sustainable development.[11]

Further, the direct goals relating to the environmental protection according to the Seventh Plan are: institutionalising the process of integrating environmental management and development; inducing organisations at the Central, State and local levels to incorporate environmental safeguards in their plans are programmes; securing greater participation of the public in environmental management; establishing a strong base for environmental research and development, demonstration and extension activities; and strengthening mechanisms for ensuring corrective action with regard to environmental degradation that has already taken place. Further, in the plan document the need of systematic review and updating amending the legislation related to environment enacted in the past in India, is felt and it is proposed to establish a mechanism for continuous review of environmental law. Finally, it has been ensured that full efforts would be made to utilize the available infrastructure in an integrated manner to environmentally sound development.

Hence, it appears that our planners have come around to realise that development cannot subsist upon a deteriorating environmental resource base and that environment cannot be protected when growth leaves out of account the costs of environmental destruction.[11a]

(B) Legal Policy For Environmental Protection

The shifts in our governmental policy towards the policy of sustainable development is reflected in the increased legislative and administrative activity in the sphere of environmental protection. In early 1970s, India entered a new era in the field of environmental legislation by enacting laws specifically aimed to deal comprehensively with environmental issues. These laws are:

(*i*) The wildlife Protection Act, 1972

(*ii*) The Water (Prevention and Control of Pollution) Act, 1974 amended in 1978 and 1988.

(*iii*) The Forest (Conservation) Act, 1980 amended in 1988.

(*iv*) The Air (Prevention and Control of Pollution) Act, 1981 amended in 1988.

(*v*) The Environment (Protection) Act, 1986.

(*vi*) The National Environmental Tribunal Act, 1995.

The administration of these laws has been entrusted to agencies created under the respective statutes. For instance, the Central and State Water Boards are responsible for carrying out the legislative mandate contained in the Water Act. Apart from such statutory agencies, the most important administrative agency vested with powers to protect the environment is the Department of Environment (DOE). The DOE was created by Presidential notification in November 1980. Its functions include environmental appraisal of development projects, direct administrative responsibility for pollution monitoring and regulation, conservations of critical ecosystems designated as biosphere reserves and conservation of marine ecosystems.

The NCEPC[12] was replaced by a National Committee on Environmental Planning (NCEP) in 1981 whereas the NCEPC was appointed, as a high advisory body to the Central Government in 1972. The major objective of the NCEP is to promote research in environmental problems and establish facilities for such research wherever necessary. The NCEP and the DOE have done considerable work. The DOE has two bodies to assist and advise it, the NCEP and National Development Board. Under the DOE function, the Botanical Survey of India, Zoological Survey of India, Central Board for Prevention and Control of Water Pollution and National Museum of Natural History.

The NCEP implements its research programme through the Indian National Man and Biosphere Committee, shortly called MAE and the Environmental Research Committee (ERC). The general areas of environmental pollution and its impact, environmental aspects of human settlements, rural environment and other related areas of the subject are covered by the ERC. The Man and the Biosphere Programme is a part of an international effort initiated by the UNESCO. Its primary objective is to study the impact of human interference on natural ecosystems. In January 1985, the DOE became a part of new Ministry of Environment and Forests. In September 1985, a new integrated department called Department of Environment, Forests and Wildlife was created.

As a result of the recommendations of the NCEPC, the Government of India appointed a Committee under the Chairmanship of Mr. N.D.

Tiwari, on February 29, 1980, for recommending Legislative Measures and Administrative Machinery for ensuring environmental protection. The terms of reference of the Committee[13] were:

"(*a*) To review the existing laws on the subject of environmental protection at the Central and State levels and recommend legislative measures required for ensuring environmental quality.

(*b*) To review the existing administrative arrangements, for the protection of environment and to recommend improved administrative machinery for ensuring environmental protection.

(*c*) To recommend appropriate and adequate machinery in Government both at the Central and the State levels for improving environmental quality and to maintain the ecological balance."

The Committee submitted its report on September 15, 1981. In addition to the valuable recommendations, the Committee has also formulated a draft national environmental policy resolution which is contained in Annexure III-14 of the Report. The objectives of the national environment policy as laid down in the resolution are: to conserve and develop safe, healthy productive and esthetically satisfying environment; to upgrade and develop rural and urban settlements and enhance the quality of life; to promote environmental safety technologies and recycling of resources, to conserve biotic diversity in the country by creating reserves and sancturies; to safeguard environment in national marine zones; to evolve environmental norms and arrange for monitoring, surveillance and collection and dissemination of information; to preserve scenic landscapes; to promote environmental education; to encourage research in environmental sciences; and to develop adequate manpower within the country of ecologists environmental scientists and planners; etc. The Resolution has also called upon the Government to create a quick responsive, independent and innovative national organisation with sufficient funds and manpower to implement national environmental policy, and to ensure that development proceeds in accordance with the objectives of the national policy.

After a critical review of the environmental legislation the Tiwari Committee noted some major shortcomings as follows:[14]

(*i*) Many of these laws are outdated;

(*ii*) They lack statements of explicit policy objectives;

(*iii*) They are mutually inconsistent;

(*iv*) They lack adequate provisions for helping the implementing machinery;

(*v*) There is no provision for reviewing the efficacy of the laws.

The Tiwari Committee's observations are the result of a micro-level analysis in which the conclusions are inferred by merely looking at the formal characteristics of numerous laws (200 odd in this case), and not relating itself to the actual socio-economic conditions in which these laws are implemented.

On the basis of its analysis the Committee made the following main recommendations:[15]

(*i*) Comprehensive review and reformation of some Central and State Acts (such as the Insecticides Act, 1968; the Water (Prevention and Control of Pollution) Act, 1974; and the Indian Forest Act, 1927).

(*ii*) New legislation for areas of action not covered by the present laws (such as those concerning toxic substances).

(*iii*) The introduction of 'Environment Protection' in the Concurrent List of the Seventh Schedule.

The National Environment Policy, after all, envisages not only conservation, development and management but also equity amongst the people sharing the environment. The Tiwari Committee has also revealed that most of our laws are at variance with the National Policy. If these laws protect or conserve, they get in the way of production and development; and where their aims are industrial or demographic development, they grossly overlook the conservation and protection of environment.[16]

Thus the major problems, from the point of view of litigation concerning violations of environmental laws, can be summarised as follows:[17]

(*i*) Litigation is very uncertain due to the complexities of the laws. The prosecuting Boards often feel frustrated in being unable to achieve their goals on account of technical legal problems — especially when Boards are not sufficiently financed to get as good a lawyer as that of the prosecuted. Moreover, the Boards can do nothing once the case is sub-judice. The environmental degradation may continue unchecked in the meantime. A good example in point is *M/s Zuari Agro Chemicals Ltd.* v. *Union Territory of Goa*,[18] where the case dragged on for years due to various administrative problems.

(*ii*) The Laws of Evidence are tortuous with consideration to the infringement of environmental laws. The litigation in *M/s Modern Bakeries* v. *Union Territory of Delhi* illustrates the concerned issues. The case revolved round the establishing of sufficient evidence; and was finally dropped.[18]

(*iii*) The litigation process is extremely slow in India. Courts are always overburdened with pending cases. Many years pass between prosecution and decision and thus unabated pollution continues in the interim period. If the companies in the lower court lose then appeal to the higher courts and thus the process continues for a long period. Appropriate examples of such cases are *M/s Rama Dyeing Works* v. *Union Territory of Delhi*[19] and *M/s Ghanshyam Chemicals* and *Proof Works* v. *Union Territory of Delhi*.[20]

Thus all these facts are available in the Annual Reports of the Central Board for Prevention and Control of Pollution.

Similarly, there are also some major prima facie problems in our legal policy for control of pollution. These prima facie problems according to an environmental jurist[21] are:

(*i*) Our environmental laws operate on a deterrent theory of criminal justice administration. But, there is a total disparity between retribution and the economic benefits of non-compliance of environmental laws. Both the Water Act, 1974 and the Environment Protection Act, 1986, are based on a deterrent theory.

(*ii*) The environmental laws fail to provide any incentive for compliance since the deterrent theory on which they operate does not take the cost-benefit analysis into account.

(*iii*) From the economic point of view the environmental laws are totally counter-productive. They either slow down production or provide the industries scope for indulging in more corrupt practices, such as maneuvoring the activities of the concerned Boards through economic or political malpractices.

(*iv*) It is easier to punish individuals but very difficult to punish intangible things such as corporations or groups of persons such as slum dwellers. It is also not always easy in environmental problems to lay the responsibility on a specific person or body. This became evident in the Bhopal tragedy case, where blame shifted from manager to some workers and then to the incorporeal body called union Carbide. A part of the problem has been solved by making the corporate liability a strict liability, by the Supreme Court in the Shriram Fertilizer case.[22] The Environmental Protection Act, 1986 deals with criminal liability. The case law, therefore, is at variance with the statutory law.

In Shriram Fertilizer case, it was also pointed out that the common law pleas, such as act of god or act of stranger, are not available in India to absolve the offender from the liability. This is, really, a welcome approach of our Supreme Court. But the question still remains whether the new approach can come to the rescue of the millions of poor people who do not have the necessary means to have access to the court for remedy. The answer may not be much encouraging. It is in this area our legal system must have new strides.[23] Thus it becomes most essential that along with the tort law, we have to develop an administrative compensation system[24] funded by the industries and the government for providing quick relief to the victims of environmental hazards. Introduction of such a compensation system does not mean doing away with the already available compensation remedy under the law. Liability for compensation imposes a deterrent effect against harmful behavior of polluter and acts as an incentive to abate pollution.

It is also necessary to establish environmental courts with power to grant reliefs, compensation and remedies. These courts should have jurisdiction to examine and decide disputes on all environmental matters. Its decision should be final, subject only to appeal to the Supreme Court by special leave under Article 136 of the Constitution of India.[25] Hence, it is suggested that a law should be enacted for establishing the environmental courts at the earliest.

3. ENVIRONMENTAL PLANNING THROUGH ENVIRONMENTAL IMPACT ASSESSMENT

Environmental impact assessment (EIA) is an exercise to evaluate the probable changes in the various socio-economic and bio-physical characteristics of the environment which may generally result from a proposed programme, project or legislation.[26] EIA is widely regarded as the most comprehensive instrument for environmental planning. It is undertaken to reduce to a minimum the possibility of an action causing unanticipated changes in the environment. It assists decision makers and planners to take into account the environmental costs and benefits of the proposed projects.

The need to introduce EIA in India is evident from the alarming state of the nation's environment, and has been recognised by the Planning Commission.[27] In the United States the need for making environmental impact study is recognised.[28]

(A) Present Procedure For Environment Impact Assessment

The Department of Environment, Forests and Wildlife (DOE), is the Indian Government's only agency responsible for environmental impact assessment. In theory, any central government project consisting more than Rs. 5 crores and which needs clearance from the Planning Commission should be routed through the DOE. The National Council on Environmental Protection (NCEP) and the DOE is required to conduct environmental impact assessment of such projects.[29] Further, DOE clearance is essential for the commencement of such projects. In 1986-87, the DOE vetoed 32 out of 59 mining projects assessed during the period. Two thermal power projects and three industrial projects were also rejected on the grounds of environmental incompatibility.[30]

Despite of such an impressive record, the DOE in its present form has been found faulted for being unequal to the task. Some critiques have observed that it does not possess the environmental analysts in adequate number, nor the support facilities to thoroughly appraise every public sector project proposal.[31] Moreover, environmental impact assessments are not used to make informed selections of project sites, but are limited to appraising the environmental consequences of projects at pre-selected sites.[32] Further there is no legislation by virtue of which the NCEP and DOE can ask the project authorities to send their project for clearance hence private projects are always outside the scope of these assessment.

The present process of environmental evaluation of developmental project is flawed. There is no opportunity in the process for public comments. Generally, the project authorities display a callous disregard for the needs of the people directly affected by the project.

A recent case concerns the Sardar Sarovar Dam. According to a recent report by Sandra Postel, Vice-President of the World-Watch Institute, Washington, the Sardar Sarovar Dam, the centerpiece of the Narmada Valley development projects, alone would flood nearly 40,000 hectares and displace upto 100,000 people. The dam's ecological impact had not been adequately investigated, nor studies completed yet on how to prevent erosion. Though we have invested Rs. 10,000 crores in 1500 dams the average yield from land benefiting from them is less than two tonnes per hectare. Seventy per cent of all available water in the country is polluted and indeed, out of 250 big surface irrigation projects launched in India since 1951, only 65 had been completed and little benefit had come from projects began after 1970. What India needs today were not large irrigation projects but small, efficiently managed and cost effective ones.[33]

In addition to the absence of public comment and scrutiny, the courts also have been effectively excluded from influencing the impact assessment process. Because, it becomes very difficult for a potential plaintiff to construct the necessary base of facts for a quit in view of the tight hold of the DOE on necessary information of the project about impact assessment. Thus, the tight hold on information by the DOE effectively precludes judicial review of DOE actions.

Recently, with a view to improve environmental impact assessments, the DOE has required central project authorities to incorporate a chapter on environmental impact of the proposed action in the project feasibility report. The DOE has also issued the guidelines to assist project authorities to take account of environmental factors at the planning stage.[34] These fresh efforts, however, do not hold much promise. The proposed guidelines are not mandatory. Hence, the impact assessment process will remain insulated from public comment, legislation oversight and judicial scrutiny. Without any new external pressures, the project authorities are unlikely to mend their ways. Thus the environmental assessment in the feasibility reports will be merely superficial evaluations prepared by inexpert personnel.

(B) Proposals For Change of Procedure of Environmental Impact Assessment

The Brundtland Report has very well recognised the need to integrate economic and ecological considerations in decision-making. To achieve such decision-making, it emphasises the need for public scrutiny, in queries and hearings on the environmental impacts of large projects. The Report says:

> "When the environmental impact of a proposed project is particularly high, public scrutiny of the case should be mandatory and, wherever feasible, the decision should be subject to prior public approval, perhaps by referendum.[35]

(i) A Superior Administrative Framework Needed

The present administrative framework for environmental impact assessments in India is inadequate for integrating economic and ecological considerations in the decision-making. Project authorities of public sector are currently required to include a chapter on environmental aspects in the project feasibility reports. Until and unless the DOE grants environmental clearance, a project cannot be initiated. The denial or grant of approval is on the basis of an EIA conducted by the DOE. Under this framework of administration, a hostile relationship is bound to develop between the DOE and other government departments and project authorities. The DOE is generally accused of delaying project clearance and further of meddling in the affairs of other departments. Moreover, such a centralised framework for environmental impact assessment is antithetical to the logic of sustainable development, which demands that environmental factors be integrated into decision-making at every stage of developmental planning.

An administrative structure which better orients project planning towards sustainable development, would require project authorities themselves to conduct an environmental impact assessment along the patterns of federal agencies' environmental impact statement (EIS) preparation under the National Environmental Policy Act 1969 (NEPA) in the United States. This would certainly lead decision-makers within departments, ministries and project authorities to weigh environmental considerations — a feature absent under the present administrative framework. Moreover, units of environmentalists acting as agents of change within departments in combinations with external sources of pressure (such as the public and courts), is a more promising way to adopt a sustainable development path than centralised DOE oversight as presently being practised in our country.

A second compelling reason for the suggested administrative framework for environmental impact assessment is, that unlike the existing administrative structure, it affords an opportunity for public comment.[36] If under the suggested administrative framework, project authorities conduct environmental impact analysis, the environmental assessment would commence together with other feasibility studies; which would allow enough time to invite public comment.

(ii) *A Summary of Proposals For Change of Procedure*

So far Indian planners have ignored environmental costs. The price of such ignorance has been savage environmental degradation. Hence, it is imperative that future development efforts be sensitive to environmental consequences. Parliament must enact, without any further delay, action-forcing legislation to institutionalise the environmental impact assessment process. The legislation should require Union Government ministries and departments to prepare EISs before initiating major developmental projects which may have a significant impact on the environment. Entrepreneurs of major private industrial projects should similarly be required EISs. The EISs, thus, would help decision-makers and planners in the Union Government to take into account environmental costs before arriving at a decision to commence a major developmental project. A public comment process and special provisions ensuring citizens' access to information should also be incorporated in the legislation.

The DOE in addition to issuing directions and regulations, should also function as an administrative board for the review and supervision of decisions taken by the project authorities. The key to the successful working of the suggested administrative and legal framework is the interdependence between external and internal influences on the environmentalists within departments and ministries combining with the external pressures from the courts, public and the DOE may be expected to lend support to each other and help foster excellent action in this area.[37] Thus the suggested legislative and institutional framework for environmental assessment would help integrate economic and ecological considerations in decision-making.

4. ENVIRONMENTAL MOVEMENTS FOR ENVIRONMENTAL PROTECTION

During recent period of human history there is strikingly high rate of resource utilisation. Ever expanding and intensifying agricultural and industrial production has generated increasing demands on the worlds total stock and flow of resources. These demands are particularly generated from the industrially advanced countries in the North and the industrial enclaves in the developing countries in the South. Actually, the increasing dependence of the industrialised societies on the resources of nature, through the quick spread of energy and resource intensive production technologies, has been accompanied by the spread of the myth that increased dependence on modern technologies means lesser dependence on nature and natural resources.[38] But there are conflicts over natural resources due to these new patterns of resource utilisation. The conflicts become visible when the resource and energy-intensive industrial technologies are challenged by the communities whose survival depends on the conservation of the resources threatened by destruction and over exploitation.[39] Or when the devastatingly destructive potential of some industrial technologies is demonstrated at ago, as in the Bhopal disaster.

Environmental movements emerging from the conflicts over natural resources and the people's right to survival are spreading in Indian subcontinent where most of the natural resources are already being utilised to provide the basic needs for survival to a large population. Thus the introduction of resource and energy-intensive production technologies under such conditions has resulted in economic growth only for a small minority while, at the same time, undermining the material basis for survival of the large majority.

Thus the deteriorating condition of natural resources in our country has in the recent past, created environmental movements of various levels. Whereas the environmental consciousness of the elite in India can be said to have started from the Stockholm Conference on Environment held in 1972, but the ecological sensitivity of the rural masses has been in their culture and consciousness. This is obvious from the people's resistance in the past to those resource utilisation patterns which are ecologically destructive. About three centuries ago the Vishnois of Khejri village in Rajasthan had sacrified more than 200 lives in a passive resistance to the felling of green trees by the royal forces of Jodhpur. Similarly, farmers and the forest-dwelling communities in all parts of the country had resisted the destruction of the forest resources by the British rulers through the Forest Satyagrahas in the 1930s. Among other notable environmental movements based on conflicts over natural resources during colonial India are the indigo movements of Bengal and Bihar, and the famous salt satyagrahas in the 1930s. And the famous salt satyagraha initiated by Gandhi at the end of the Dandi March, that marked the beginning of the non-cooperation movement in the 1930s.

People's environmental movements have come as a response to the threat to their survival base as a demand for the conservation of the very vital natural resources that are still remaining and sustaining the people of the country. The most vital natural resources for survival of the people that are getting destroyed are the soil, water, air and the vegetation systems. All the most important people's environmental movements in India in the last few decades have taken place around the issue of the conservation of these essential natural resources.

(A) Chipko Movement For Environmental Protection

The Chipko movement is, really, the most widespread and well known people's movement for environmental protection in India.[39a] It is a movement of those people who are living in and around the forests that sustain their lives. All the economic activities connected with the livelihood of these people are based on forest resources, which play a very vital role in the stabilization of the soil and water systems and thus maintain fertility of the land. These forest people are also dependent on the forest for basic necessities like fodder, fuel, green manure, fruits, nuts etc. Common resources like forests that have high ecological significance and local use value were transformed into commodities with the introduction of modern forest management by the British.

It, thus, opened a vista for large-scale commercial exploitation of the forest resources. This came in direct conflict with the ecological functions of the forests as well as the satisfaction of the basic needs of forest products for the local people. The destruction of the material basis for survival of the local people through the impact of commercial forestry created the Chipko movement first in the Himalayan area of the state of U.P. and later in other mountain areas like the Western Ghats, the Aravallis and the Vindhyas.

The movements for the protection of forests to ensure survival of tribal people has been the main characteristics in the Central India. Notable among these movements are those of the people of the Singbhum and the Bastar regions. These movements were aimed against the conversion of mixed natural forests to monoculture of commercial species like teak or tropical pine since this process of conversion ensures the destruction of the material base for survival of a large population of tribal people.[41]

(B) Some Other Movements For Environmental Protection

These are people's movements going on in diverse areas of the country against the big dams like Tehri in the north, Sirsi in the south, Koel-Karo on the east and Inchampalli in Central India. These movements are against the destruction of forests and agricultural land by these big dams. The development projects like big dams are threatening these resources of land and forests by submersion or colonisation for urban settlements.

Similarly, the destruction of the life support system through the introduction of waterlogging and salinity has been resisted by the farmers' movements in various parts of the country particularly in Karnataka and Madhya Pradesh.[42] Another significant people's movement based on conflicts over natural resources has evolved around the threat to the marine resources as well as to the survival of the millions of people belonging to the indigenous fishing communities posed by the reckless overfishing by mechanised boats and ecological destruction caused by trawling.[43]

(i) Two Environmental Movements in Karnataka

For over eight years, the Samaj Privartan' Samudaya (SPS) has been actively associated with the two people's movements, viz., the one against pollution of Tungbhadra river and air by two industries, Harihar Polyfibres and Gwalior Rayon; and the other for reclaiming of large tracts of common lands given to a joint sector company, called the Karnataka Pulpwood Limited (KPL), whose sole purpose is to grow eucalyptus and other fast growing species on 75,000 acres of common lands in six districts for captive consumption of Harihar Polyfibres (HPF), thereby depriving over five lakh of people of their basic needs, like fodder, fuel, small timber, green manure, raw materials for artisans and fruits. In addition, SPS has also played an important role in coordinating the environmental movement at the state level, the now well known movement called "Save the Western Ghats March" (SWGM) and the Kanyakumari March and facilitating dialogue on common lands through symposia and seminars where the affected people, government officials, and urban experts are brought face to face.[44]

The systematic movement against pollution of Tungabhadra river, a major lifeline of Karnataka, began in 1983. The approach evolved for the environmental movement by SPS included: formation of Village Environment Committees in all affected villages with priority for women, fisherfolk, shepherds, etc., who are most affected. It is these Environmental Committees from various villages which have formed an apex organisation, called the Tungabhadra Prisara Samitis, which is now in the forefront of the movement against pollution and makes all decisions about people's actions in environmental protection.[45]

The SPS basically plays a supporting role to the people's organisation by helping to organise environmental camps and jathas, conduct scientific studies of the pollution and common lands, and file public interest litigation in local courts, High Court and supreme Court and also training in non-violent direct action of people (Satyagraha) as the last recourse to redress the injustice.

The people's participation in the movement against pollution grew steadily from padyatra in the affected villages, the environmental camps, dialogue with the management of the factory and the Karnataka State Pollution Control Board officials and Satyagraha in front of factories. Hence, the basic approach of the SPS on the issue of common lands has been the same as in the case of the movement against pollution.

(ii) The Environment Society of Chandigarh

The Press, radio, television and other media highlight the evils of environmental Pollution and try to create an environmental awareness in the public. Once people become environmentally conscious and environmental mass movements gather momentum, environmental law can not lag behind.

Several hundred non-governmental organisations have been formed and are working for the environmental conservation and protection. The Environment Society of Chandigarh is one of them.[46] It was founded in 1976 by Mr. S.K. Sharma, Assistant Director of Epidemological Services, Chandigarh Administration when the concept had yet to assume importance at national level. This society has established itself as one of the foremost society in India and working actively educating the citizens about the environmental protection and conservation.

Activities of the Society

The Society celebrates Van Mahotsava (1st week of August) by planting trees in and around Chandigarh, wild life week (2nd week of October) and Bhopal Day (1st week of December) every year. The Society also celebrates Basant Panchmi Day every year. Every year the Society celebrates K.L. Saigal commemoration Day (18th January) because he rendered classical songs on beautiful and aesthetic environment. Every year this Society holds reception to migratory birds at the Sukhna lake, Chandigarh.

The Society's participation and celebration of World Environmental Day, World Forest Day, World Health Day, World Literary Day, and Hiroshima Day are particularly noteworthy. Posters with catchy slogans, attractive design and colours can be a very effective aid in educating the people about environmental protection and conservation. With this in view, this Society organised International Posters Competition on environmental problems and conservation (June 1984). 32 countries participated in the exhibition. Encouraged by excellent response, this society organised International Postage Stamps Exhibition "World United for Environmental Protection and Conservation" during June, 1985. 39 countries participated in the exhibition.[47]

The Society in collaboration with the Environmental Public Health Department of Chandigarh Administration has introduced an innovative Environment/Health Education Programme for School children in all the 190 schools of Chandigarh. Every Saturday is observed as school Environment/Health day. Environment Committee consisting of teachers and students has been formed in each school. The school authorities has been asked to start compost pits, nurseries and flower trees in their premises.

Every year society honours persons who have distinguished in environmental and nature conservation. It has so far honoured Padam Vibhushan Dr. Salim Ali, Mr. P.R. Mishra, Padam Shri Nek Chand and Ms. Madhu Sarin. The Society has decided to establish Environment Society at each district HQ, town and has addressed letters to experts to form committees at village/Mohalla level for nature conservation.[48]

The Society's plan of action with its small number of dedicated experts to educate the citizens for the environmental protection and conservation is the most comprehensive in India. "Small is beautiful" a catch phrase amongst the environmentalists. In case of Environment Society of Chandigarh (E.S.C.) it could be a case of "Small is successful".

(iii) Environmental Movements And Conflicts Over Natural Resources

Inspite of differing in their geographical location or the resource focus, all people's environmental movements in India arise from and make visible conflicts over natural resources in a common way. These conflicts exist at three levels[49]:

(a) Conflicts at Economic Level

The environmental movements to resist ecological destruction and to ensure conservation of natural resources bring out the conflicts between two types of economic activity; one that ensures survivals for the people in a sustainable manner through a genuinely collective management of resources, the other that maximises economic growth for a few at the cost of the basis for the material survival of many.

(b) Conflicts at Technological Level

The people's ecological movements based on the issue of survival do not merely show resistance against resource destruction but also question the manner in which resources get transformed. processed and utilised. These movements thus bring out the conflicts between the two groups of technologies, one aimed at ensuring survival by minimising ecological costs and the other aimed at maximising short-term growth with heavy negative externalities in the form of resource destruction.

(c) Conflicts at Scientific Level

The people's movements emerging from conflicts over natural resources also raise issues in the policies of knowledge and show that the dominant scientific expertise is geared to the objective of the maximisation of growth. It is not capable of responding to the problems of survival by ensuring sustainable and ecological utilisation of natural resources. The ecology movements indicate that ecology provides foundation for an alternative science which would recognise the diverse ecological processes in nature which relate the natural resources and determine their diverse material properties, thus creating a science for survival.

5. REVIEW

Since long, India's policy-planners have ignored environmental costs.

The price of this ignorance has been savage environmental degradation, which has affected every Indian today. It is now imperative that future development efforts must be sensitive to environmental consequences. Presently, those in Union Government who are responsible for environmental Protection, are institutionally separated from those responsible for promoting development. But "the real world of interlocked economic and ecological systems will not change; the policies and institutions concerned must".[50] The suggested legislative and institutional framework for environmental assessment would help integrate economic and ecological considerations in decision-making.

Public participation in environmental decision-making renders reasonable and effective opportunity to all the interests, affected or likely to be affected, to present their case.[51] The most significant contribution of the nascent environmental movements in India has been to bring into sharp focus the vital connection between growing poverty of vast numbers of marginalised people and the accelerating environmental degradation and the need to involve the people especially the affected people actively in the protection and management of natural resources like forests, rivers and grazinglands.

The evolution of the ecological, sustainable and equitable utilisation of natural resources in an alternative development strategy will also be resisted by the vested interests who benefit from the existing reductionist, unsustainable and inequitable utilisation pattern. This process has already been initiated in India. On one hand, people's attempt at redefining development through sustainability and justice is resisted by the introduction of a false dichotomy between 'development' and 'ecology' which covers up the real dichotomy between environmental protection and unsustainable economic growth. On the other hand, the resistance is created by the rejection of people's perception of ecological destruction as' unscientific', unproved and unverified. Hence, these attempts of experts and vested interests will work against human knowledge and against the possibilities of human survival. The growing conflict between the profitability imperative and the survival imperative will lead to the emergence of a policies of knowledge.[52] Sustainable development and environmentalism are not opposed to each other, they are complementary. But the problems of environmental protection, preservation and promotion are long-standing and ever-growing. Without the prodding and support of the environmental movement, these problems would take along time to be treated and solved.[53]

It becomes now recognised in our country that the unintended environmental impacts resulting from execution of development projects like those involving thermal or hydropower generation, mining, industry, agriculture, human settlements etc.., can be minimised or even completely avoided by adequate pre-planning through use of techniques like environmental impact analysis for which interdisciplinary expertise will have to be built up.[54] Environmental considerations must form an integral part for all planning for development and be supplemented by mechanisms to see that environmental safeguards proposed are actually implemented togather with systematic monitoring to assess the effectiveness of such precautions in protecting the environment.

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8. See Government of India, Planning Commission, Fourth Five Year Plan (1969-1974), Chapter 6.
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10. Draft Sixth Five Year Plan (1978-83), p. 117.
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12. The major objectives of the NCEPC have been discussed in the earlier pages of this chapter.
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28. Under the National Environmental Policy Act, 1969, 'every major federal action significantly affecting the quality of human environment' should be preceded by an environment impact statement. The E.I.S., as it is called popularly, should address five matters:
    (*i*) the environmental impact of the proposed action,
    (*ii*) any adverse environmental effects which cannot be avoided,
    (*iii*) alternatives to the proposed action,
    (*iv*) the relationship between local short-term uses of man's environment andthe maintenance and enhancement of long-term productivity, and
    (*v*) any irreversible and irretrievable commitments of resources, which would be involved in the proposed action should it be implemented.
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33. Moin Qazi, "The Case Against Big Dams", *Indian Express*, February 7, 1990, p.4; It may further be noted here that the lopsidedness of the present policies of

CHAPTER THREE

Control of Water Pollution: Law, Procedure and Practice

1. IMPORTANCE OF PURE WATER

According to scientists at our National Environmental Engineering and Research Institute, a staggering 70 per cent of the available water in India is polluted. It is also estimated that 73 million work days are lost every year due to water related diseases, such as typoid, infective hepatitis (Jaundice), cholera, diarrhoes and dysentery. Many of them become epidemic proportions. The cost of treating them and the loss in production amount to Rs. 600 crores a year.[1]

Water is so much a part of our daily life and existence, that we are inclined to take it for granted, believing that it will always be available in abundance. Such, however, is not the position. Our supplies of water are very limited.[2] According to the Central Board for the Prevention and Control of Water Pollution, the fresh water that is so essential to our lives is only a small portion of the earth's total water supply; it is only about two per cent of the total. Nearly all of this is locked in the masses of ice-caps, glaciers and clouds; and (constitute) about 1.998 per cent of the total. The remaining small fraction of fresh water has accumulated over centuries in the lakes and underground supplies of the world, about 0.00192 per cent of the total. Almost 85 per cent of the rainfalls directly go into the sea and never reaches the land. The small remainder precipitates on land. It is this water that fills the lakes, wells, underground supplies, and keeps the river flowing and the latter constitutes only 0.00008 per cent of the total. Humanity is left with only one tea-spoonful of sweet water for every five litres of total water.[3] This presents a dismal picture of the State of our drinking water. In a world population of 5,000 million, as many as 1700 million lack safe drinking water.[3a]

2. MAJOR TYPES OF WATER POLLUTION AND THEIR CAUSES

There are six major types of water pollution. These are:

(*i*) Natural pollution of Water
(*ii*) Industrial pollution of Water
(*iii*) Sewage pollution of Water
(*iv*) Thermal pollution of Water
(*v*) Radioactive substances pollution of water
(*vi*) Agricultural pollutants pollution of water

(*i*) *Natural Pollution of Water*

Natural pollution has always been with us. There has been waste material in water right from the first appearance of men, animals and plants on earth. Not only the natural body, but also dead organic matter generally finds its way into our lakes, streams, rivers and oceans. Every time running water flows over soil, rocks and mineral deposits, organic wastes and excess minerals and chemicals are added to the water supply and thus pollute water.

(*ii*) *Industrial Pollution of Water*

Water pollution is caused by industries through the discharge of floating matter, settleable solids, colloidal matter, dissolved solids, toxic substances and sullage. These industrial pollutants include chemical substances, heavy metals, hydrocarbons and radioactive substances from foodstuffs industries. These pollutants are introduced via the groundwater river exchange, through rain water, by the leaching of industrial waste dumps or by accidental leaks during storage and transport. Thus our rivers, streams and water reservoirs get highly polluted due to the uncontrolled discharge of industrial effluents.

(*iii*) *Sewage Pollution of Water*

Water pollution due to sewage is often the most obvious to the naked eye, and most adoriferous to the nose, this pollution consists of raw or partially treated domestic waste sewage contains both liquid and solid wastes from human beings. The human and animal waste contain readily puterscrible substances and many disease causing organisms. Thus our rivers, streams and water reservoirs are polluted from uncontrolled discharge of human wastes.

(*iv*) *Thermal Pollution of Water*

Thermal pollution of water may occur due to power plants and factories. The excess heat discharged by power plants into a stream, lake or river causes pollution as an increase in natural temperature of water upsets the natural balance. Fish can not survive in high temperatures, which also kills natural foods of river life. Hot water is put into water courses by industries that use water for cooling purposes. Steel mills, oil refineries and breweries use large quantity of water for cooling.[4]

(*v*) *Radioactive Substances Pollution of Water*

Radioactive substances cause water pollution and are even more difficult to handle. These materials are produced in the processing of uranium and other radioactive substances or in testing of the thermonuclear devices that produce nuclides in blast devices and fallout. It may take years for the level of radioactivity in the water to fall. Practically the only way known to dispose of such materials is to dump them into the ocean beyond the continental shelf or to pump them into abandoned mines and deep wells. Even so there is a possibility that this may still cause pollution of oceans or underground water supplies.

No proven technologies are yet available to securely seal the damaged reactor of the Chernobyl Nuclear Reactor and safe solution to the problem of radioactive waste disposed from nuclear plants, even after four years of the Chernobyl disaster and to avoid the very real danger of nuclid migration in subsoil waters.[5]

(*vi*) *Agricultural Pollutants Pollution of Water*

Agricultural pollutants include fertilisers, herbicides and pesticides. Pollution caused by these agents is generally spread over vast areas by irrigation water or rain water; the pollutants include nitrates, phosphates and sulphates.[6]

A number of pesticides presently use in agriculture are toxic to human beings. Even though very small concentrations of pesticides are carried in agricultural drainage, these concentrations get magnified severalfold as they pass through the food chain of aquatic plants and animals. Nitrogenous and phosphatic fertilisers which are soluble in water are widely used in agriculture. The residual nitrates and phosphates present in agricultural drainage causes pollution of water sources receiving such drainage.[7]

Even ground water is not immune from pollution. Ground water gets polluted due to seepage or percolation from the surface. It has been stated: "Human wastes may cause pollution by seepage from improperly constructed or improperly placed septic tanks, cesspools, or leaking sewer lines. Industrial wastes including highly poisonous chemicals, may be introduced to ground water either by intention or accident. Even the dumping and covering of vegetable materials in garbage result in their decomposition and the carrying down of decomposition products, including carbon dioxide gas, by percolating water into underlying ground-water bodies from the article."[8] Damage of ground-water can never be rectified. Few seem to realise this fact.

3 GROWING MENACE OF WATER POLLUTION

According to latest data on water pollution level in major Indian rivers and water bodies, the polluted water has become a direct cause of 42 per cent human and animal diseases.[9] Nearly 85 per cent water pollution is on account of domestic sewage, whereas hardly 15 per cent water pollution is due to industrial effluents. Domestic and industrial effluents find their way into rivers, lakes, sea and on land. Only 43 per cent of class I cities and 12 per cent of class II cities are sewered in our country. Only 37 per cent of sewage is partially treated in class I cities and 5 per cent in class II cities. Even metropolitan cities — Delhi, Calcutta, Bombay and Madras — are partially sewered. Delhi, the capital of India, is only 50 per cent sewered. It is estimated that at 1985 price indices, Rs. 16,000 crores are needed for sewage collection and treatment to cover class I and II cities.[10] Hence, considering the magnitude of the problem, urban water pollution is left practically untouched, except in those cities and towns which are along the Ganga river where, under the Ganga Action Plan the sewage will hopefully be either fully treated where it is necessary or will be diverted from the river. According to the Central Board for Water Pollution,[11] only eight cities in India are provided with complete sewerage treatment facilities. They are Ahmedabad, Bangalore, Bijapur, Sangli, Nanded, Nasik, Thane and Durgapur.

Our rivers, streams and water reservoirs are highly polluted from the discharge of industrial effluents, sewage and other wastes.[11a] According to a survey carried out by the Central Pollution Control Board, there were 4750 large and small industries in the country in 1983-84. In 1990, the number must have gone above 7,000. Another report[12] said that Kanpur alone dumped 274.3 million litres of new sewage into Ganga every day. Drinking water supplied in eleven cities of U.P. was not fit for human and animal consumption and specifically 98 per cent residents of Varanasi were suffering from stomach ailments. Apart from one hundred million litres of untreated water, 42,000 bodies were cremated a Varanasi. Another 3000 unclaimed bodies and 9,000 dead cattle were being thrown into the Ganga every day from Varanasi alone.

Similarly, the River Yamuna has been effected by the dumping of toxic effluents by various industries of Delhi. The daily flow of untreated toxic waste water into the Yamuna river via 17 major drains of Delhi is a startling 515000 kilolitres per day carrying about 150 tons of organic matter, 300 tons of dissolved solids and 150 tons of suspended solids.[13] Also, in a report [14] about the seriousness of water pollution in the Yamuna caused by the discharge of Delhi's waste, the Central Pollution Control Board states:

> What is depicted in this report is a replica of what may be seen at Ludhiana in Panjab, Srinagar in Jammu & Kashmir, Varanasi in U.P., Patna in Bihar, Calcutta in West Bengal, Gauhati in Assam, Cuttack in Orissa, Visakhapatnam in Andhra, Indore in M.P. and Madras in Tamil Nadu. The daily discharge of waste water... is threatening the natural water bodies like rivers, estuaries and coastal waters.

Thus pollution of water on account of discharge of industrial and domestic wastes into rivers, streams and lakes etc. has today assumed such alarming proportions that it is not only adversely affecting the fauna and flora and natural environment, but also posing a very serious threat to human life.[15]

4. COMPLEXITY OF THE PROBLEM OF CONTROLLING WATER POLLUTION

Controlling of water pollution is an extremely difficult task. Added to this are also other economic and administrative problems. These problems may be articulated here. First, India is a federal country where all rivers are inter-state and water is a state subject. An upper reparian state may frustrate the attempts of a lower reparian state to control pollution of its river water by using its river water for various purposes which may have the effect of changing the quality and quantity of water flowing to the lower reparian state. Secondly, the quality of water in a polluted material but also on the abstraction of water from the stream. particularly for irrigation. As the position stands today, there are separate authorities all over country dealing with irrigation and pollution.[16] Thirdly, it is not always easy to measure water pollution. In extreme cases, our noses are some help. In other cases, the sudden appearance of thousands of dead fish indicates that something is wrong. At present time, scientists use physical methods for measuring water pollution, such as inserting meters which measure the electrical conductivity of the water. This indicates the level of dissolved salts. Perhaps the most common test is to measure for the Bio-chemical Oxygen Demand (BOD) level of the water. Fourthly, there is a problem of attaining purity between standards of industry and sewage effluent which goes into the stream and the standard of purity of water of the stream[16a] (stream standard). It is the stream standard which is only suitable for consumers of water for drinking purposes. The stream standard will depend not only on sewage or effluent standard but also on the quantity of water in the stream and quantity of effluent going into it (which will depend upon the number of industries and the municipal outlets for discharging sewage). Thus there will remain always the question of striking a balance between industrialisation and pollution a choice difficult to make.

5. EARLIER ATTEMPTS FOR LEGAL CONTROL OF WATER POLLUTION

Though the most comprehensive attempt for prevention and control of water pollution is made by the Water (Prevention and Control of Pollution) Act, 1974, yet prior to that also there were some legal provisions for control of water pollution.[17]

Long standing concern for the purity of water and environment generally is evident from sections 277 and 278 of the Indian Penal Code, 1960. Section 277 lays down that whoever voluntarily corrupts of fouls the water of public spring or reservoir, so as to render it less fit for the purpose for which it is ordinarily used, shall be punished with imprisonment of either description for a term which may extend to 3 months, or with fine which may extend to 500 rupees, or with both. Section 278 lays down that whoever voluntarily vitiates the atmosphere in any place so as to make it noxious to the health of the persons in general, dwelling or carrying on business in the neighbourhood or passing along a public way, shall be punished with fine which may extend to 500 rupees.

Almost since the beginning of this century, some of our Municipal and Public Health laws, particularly those for large cities, on the pattern of United Kingdom's Local Authorities Act, conferred powers on our local bodies for controlling water pollution caused by industrial effluents and for necessary enforcement action against the erring industries. Our Municipal Acts generally prohibit persons from discharging any pollutant or industrial effluent from factories into Municipal drains, except in accordance with the relevant bye-laws. Likewise, no sewage can be discharged into any water course until it has been treated so as not to contaminate the water. For illustration, sections 241, 242 and 250 of Delhi Municipal Corporation Act, 1957 could be usefully referred.

There is also a provision in the Factories Act, 1948 with regard to the disposal of water and effluents by factories. Section 12 provides that (1) effective arrangement shall be made in every factory for the disposal of wastes and effluents due to the manufacturing process carried therein; and (2) the State Government may make rules prescribing the arrangements to be made under sub-section (I) or requiring that the arrangements made in accordance with sub-section (1) shall be approved by such authority as may be prescribed. The punishment for the violation of the above provisions and the rules made thereunder is imprisonment for a term which may extend to 3 months or fine which may extend to 500 rupees, or both.

Under section 133 of the Criminal Procedure Code, 1973, the Magistrate has been given powers to order that any unlawful obstruction or annoyance should be removed from any way, river or channel, which is or may be lawfully used by the public. The Supreme Court decision in *Municipal Council, Ratlam* v. *Vardhichand*[18] clearly shows that section 133 can be really potent in curbing pollution. The brief facts of this case are as follows:

> Residents of a locality within limits of Ratlam Municipality irritated by stench and stink caused by open drains and public excretion by nearby slum-dwellers moved the Magistrate under section 133 of Cr. P.C. to require the Municipality to do its duty towards the members of the public. The Magistrate gives directions to Municipality to draft a plan within six months for removing nuisance. In appeal, Sessions Court reversed the order. The High Court approved of the order of Magistrate. In further appeal, the Supreme Court also affirmed the Magistrate's order.

The Supreme Court in its judgement categorically and emphatically laid down that where there existed a nuisance in a locality due to open drains, heaps of dirt, pits and excretion by human for want of lavatories and consequential breeding of mosquitoes the court could require municipality, under section 133 of the Criminal Procedure Code which provides for public nuisance, to abate the nuisance by taking affirmative action on a time bound basis. When such order is made, the municipality cannot take the plea that notwithstanding the public nuisance, financial inability validly exonerated it from that Section 133, Cr. P.C. was categoric although its language shows a discretion resting with the court, because judicial discretion when facts for its exercise are present, has a mandatory import.

The Supreme Court further said that public nuisance because of pollutants being discharged by big factories, to the detriment of the poorer sections, is the serious challenge to the social justice component of the rule of law. The Supreme Court further rightly held that a responsible municipal council constituted for the precise purpose of preserving public health and environment cannot run away from its principal duty by pleading financial inability.

6. MODERN LEGISLATION FOR CONTROL OF WATER POLLUTION

(A) The Water (Prevention and Control of Pollution) Act 1974

For the first time, a big attempt at prevention and control of water pollution was made by the Water (Preventions and Control of Pollution) Act, 1974.[19] This Act[19a] was enacted to provide for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water, and for the aforesaid purposes to provide for the establishment of Boards for the Prevention and Control of Water Pollution and by conferring on such Boards adequate powers.

(i) Some Important Terms Defined

The Act defines some of the important terms like "occupier", "Sewage effluent", "Trade effluent", "Sewer", "Pollution" and "Stream".

Pollution has been defined[19b] by this Act to mean "such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or likely to create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms".[20]

In the Helsinki Rules on the use of Waters of International Rivers, "water pollution" has been defined as something referring to any detrimental change resulting from human conduct in the natural composition, content, or quality of the waters of an international drainage basin. Changes in the physical, chemical, biological or bacteriological characteristics can be the test for determining pollution.

For the purpose of the 1974 River Act, "stream" is defined[21] in a very comprehensive manner. It includes the following:

(*a*) river

(*b*) water courses (whether flowing or for the time being dry)

(*c*) inland water (whether natural or artificial)

(*d*) sub-terranean waters and

(*e*) sea or tidal water to such extent or as the case may be, to such point as the state government may, by notification in the Official Gazette specify in this behalf.

But a much more comprehensive definition also could be given to include all possible sources of water. For instance in some of the state enactments there are, in similar contexts more comprehensive definitions of some related terms. In the Haryana Canal and Drainage Act, 1974 a "Canal" is defined[22] to include:

(*a*) all canals, channels and reservoirs constructed, maintained or controlled by the State Government for the supply of water;

(*b*) all works, embankments, structures, including supply escape channels connected with such canals, channels or reservoirs;

(*c*) all water courses;

(*d*) all parts of a river, stream, like or natural collection of water or natural drainage channel, to which the State Government has applied the provisions of Part II of the Act;

(*e*) all fields drains;

(*f*) all state tubewells; and

(*g*) all drains, works, embankments and structures connected with drains maintained or controlled by the State Government.

Similarly, sea and tidal waters are also within the definition of "stream" for the purpose of the River Act.[23]

(ii) Functions of Central Board (Section 16)

(1) Subject to the provisions of this Act, the main function of the Central Board shall be to promote cleanliness of streams and wells in different areas of the State.

(2) In particular and without prejudice to the generality of the foregoing function, the Central Board may perform all or any of the following functions, namely—

(*a*) advise the Central Government on any matter concerning the prevention and control of water pollution;

(*b*) coordinate the activities of the State Boards and resolve disputes among them;

(*c*) provide technical assistance and guidance to the State Boards, carry out and sponsor investigations and research relating to problems of water pollution and prevention, control or abatement of water pollution;

(*d*) plan and organise the training of persons engaged or to be engaged in programmes for the prevention, control or abatement of water pollution on such terms and conditions as the Central Board may specify;

(*e*) organise through mass media a comprehensive programme regarding the prevention and control of water pollution;

(*f*) collect, compile and publish technical and statistical data relating to water pollution and the measures devised for its effective prevention and control and prepare manuals, codes or guides relating to treatment and disposal of sewage and trade effluents and disseminate information connected therewith;

(*g*) lay down, modify or annual, in consultation with the State Government concerned, the standards for a stream or well:

Provided that different standards may be laid down for the same stream or well or for different streams or wells having regard to quality of water, flow characteristics of the stream or well and the nature of the use of the water in such stream or well or streams or wells;

(*h*) plan and cause to be executed a nation-wide programme for the prevention, control or abatement of water pollution;

(*i*) perform such other functions as may be prescribed.

(3) The Board may establish or recognise a laboratory or laboratories to enable the Board to perform its functions under this section efficiently, including the analysis of samples of water from any stream or well or of samples of any sewage or trade effluents.

(*iii*) *Functions of State Boards* (*Section 17*)

(1) Subject to the provisions of this Act, the functions of a State Board shall be —

(*a*) to plan a comprehensive programme for the prevention, control or abatement of pollution of streams and wells in the State and to secure the execution thereof;

(*b*) to advise the State Government on any matter concerning the prevention, control or abatement of water pollution;

(*c*) to collect and disseminate information relating to water pollution and the prevention, control or abatement thereof;

(*d*) to encourage, conduct and participate in investigation and research relating to problems of water pollution and prevention, control or abatement of water pollution;

(*e*) to collaborate with the Central Board in organising the training of person engaged or to be engaged in programmes relating to prevention, control or abatement of water pollution and to organise mass education programmes relating thereto;

(*f*) to inspect sewage or trade effluents, works and plants for the treatment of sewage and trade effluents and to review plans, specifications or other data relating to the plants set up for the treatment of water, works for the purification thereof and the system for the disposal of sewage or trade effluents or in connection with the grant of any consent as required by this Act;

(*g*) to lay down, modify or annual effluent standards for the sewage and trade effluents and for the quality of receiving waters (not being water in inter-state stream) resulting from the discharge of effluents and to classify waters of the State.

(*h*) to evolve economical and reliable methods of treatment of sewage and trade effluents, having regard to the peculiar condition of soils, climate and water resources of different regions and more especially the prevailing flow characteristics of water in streams and wells which render it impossible to attain even the minimum degree of dilution;

(*i*) to evolve methods of utilisation of sewage and suitable trade effluents in agriculture;

(*j*) to evolve efficient methods of disposal of sewage and trade effluents on land, as are necessary on account of the predominant conditions of scant stream flows that do not provide for major part of the year the minimum degree of dilution;

(*k*) to lay down standards of treatment of sewage and trade effluents to be discharged into any particular stream taking into account the minimum fair whether dilution available in that stream and the tolerance limits of pollution permissible in the water of the stream, after the discharge of such effluents;

(*l*) to make, vary or revoke any order—

  (*i*) for the prevention, control or abatement of discharges of waste into streams of wells; and

  (*ii*) requiring any person concerned to construct new systems for the disposal of sewage and trade effluents or to modify, alter or extend any such existing system or to adopt such remedial measures as are necessary to prevent, control or abate water pollution.

(*m*) to lay down effluent standards to be compiled with by persons while causing discharge of sewage or sullage or both and to lay down, modify or annual effluent standards for the sewage and trade effluents;

(*n*) to advise the State Government with respect to the location of any industry, the carrying on of which is likely to pollute a stream or well; and

(*o*) to perform such other function as may be prescribed or as may, from time to time, be entrusted to it by the Central Board or the State Government.

(2) The Board may establish or recognise a laboratory or laboratories to enable the Board to perform its functions under this section efficiently, including the analysis of samples of water from any stream or well or of samples of any sewage or trade effluents.

Thereafter, section 18 says that in the performance of its functions under this Act (*a*) the Central Board shall be bound by such directions in writing as the Central Government may give to it; and (*b*) that every State Board shall be bound by such directions in writing as the Central Board or the State Government may give to it: provided that where a direction given by the State Government is inconsistent with the direction given by the Central Board, the matter shall be referred to the Central Government for its decision.

(*iv*) *Powers of the State Boards*

For discharging the onerous functions which have been entrusted to the care of the State Boards, conferment of some enabling powers on these Boards is most essential. This has been done by various provisions in Chapter V of the Act, like sections 20, 21, 23, 24, 25, 27, 30, 32 and 33.

Sub-section (1) of section 20 says that for the purpose of enabling a State Board to perform the functions conferred on it bys or under this Act, the State Board or any officer empowered by it in that behalf, may make surveys of any area and gauge and keep records of the flow or volume and other characteristics of any stream or well in such area and may take steps for the measurement and recording of the rainfall in such area or in part thereof and for the installation and maintenance for those purposes of gauges or other apparatus and works connected therewith, and carry out stream surveys and may take such other steps as may be necessary in order to obtain any information required for the purposes aforesaid. Sub-section (2) then says that a State Board may give directions requiring any person who in its opinion is obstructing water from any such stream or well in the area in quantities which are substantial in relation to the flow or volume of that stream or well or is discharging sewage or 'trade effluent' into any such stream or well, to give such information and in such form as may be specified in the directions. Sub-section (3) thereafter goes on to say that without prejudice to the provisions of sub-section (2), a State Board may, with a view to preventing or controlling pollution of water, give directions requiring any person incharge of any establishment where any industry or trade is carried on, to furnish to it information regarding the construction, installation or operation of such establishment or of any disposal system or of any extension or addition thereto in such establishment and such other particulars as may be prescribed.

Section 21 gives to the State Boards very large powers to take samples of effluents and also lays down the procedure to be followed in connection with the taking of samples. Sub-section (1) of section 21 says that a State Board or any officer empowered by it in this behalf shall have power or take for the purpose of analysis, samples of water from stream or well or samples of any sewage or trade effluent which is passing from any plant or vessel or from or over any place into any such stream or well.

Section 23, laying down the power of entry and inspection, says that subject to the provisions of this section, any person empowered by a State Board in this behalf shall have a right at any time to enter, with such assistance as he considers necessary, any place — (*a*) for the purpose of performing any of the functions of the Board entrusted to him; (*b*) for the purpose of determining whether and if so in what manner, any such functions are to be performed or whether any provisions of this Act or the rules made thereunder or any notice, order, direction or authorisation served, made, given or granted under this Act is being or has been complied with; (*c*) for the purpose of examining any plant, record, register, document, or any other material object or for conducting a search of any place in which he has reason to believe that an offence under this Act or the rules made thereunder, has been or is being or is about to be committed and for seizing any such plant, record, register, document, or other material object, if he has reason to believe that it may furnish evidence of the commission of an offence punishable under this Act or the rules made thereunder.

Section 24 then lays down prohibition on the use of stream or well for disposal of polluting matter, etc.

Section 25 lays down restrictions on new outlets and new discharges. Sub-section (1) of this section, says that subject to the provisions of this section, no person shall without the previous consent of the State Board, bring into use any new or altered outlet for the discharge of sewage or trade effluent into a stream or well or begin to make any new discharge of sewage or trade effluent into a stream or well. The State Board may grant the consent after making such enquiry as it may deem fit and may also impose some conditions. Of course, the application for the consent of the State Board under sub-section (1) shall be accompanied by such fees as may be prescribed and shall be made in the prescribed form and shall contain particulars regarding the proposed construction, installation, or operation of the industrial or commercial establishment or of any treatment and disposal system or of any extension or addition thereto and such other particulars as may be prescribed.

Section 26 lays down that the provisions of section 25 shall apply to the existing discharge of sewage or trade effluent and the application for consent in this case shall be made within a period of 3 months of the constitution of the State Board. Sub-section (1) of section 27 says that a State Board shall not grant its consent to the bringing into use of a new or altered outlet unless the outlet is so constructed as to comply with any conditions imposed by the Board to enable it to exercise its right to take samples of the effluents. Sub-section (2) of section 27 says that a State Board may from time to time review any condition imposed under section 25. Section 28 provides for Appeals against the orders of the State Board within 30 days. The appeal shall lie to the Appellate Authority as the State Government may think fit to constitute.

Section 29 provides for Revision by the State Government either of its own motion or on an application made to it in this behalf. It may do so by calling for the records of any case where another had been made by the State Board under section 25, section 26 or section 27. Section 30 gives to the State Board the power to carry out works in regard to the execution of which the party ordered by the State Board commits default. Section 32 provides for emergency measures in case of pollution of stream or well. Section 33 gives to the State Board the power to make application to courts for restraining apprehended pollution of water in streams or wells. And, no public interest can claim superiority over the ecological interest.[23a]

(v) *Penalties and Procedures*

Sub-section (1) of section 41 says that whoever fails to comply with any direction given under section 20 or section 32 shall, on conviction, be punishable with imprisonment for a term which may extend to 3 months or with fine which may extend to 5,000 rupees or with both. Sub-section

(2) of this section says that whoever fails to comply with any direction issued by a Court under sub-section (2) of section 33 shall, on conviction, be punishable with imprisonment for a term which may extend to 3 months or with fine which may extend to 5,000 rupees or with both.[24] Section 43 provides for penalty for contravention of provisions of Section 24 and says that the person who contravenes the provisions of section 24 shall be punishable with imprisonment for a term which shall not be less than six months but which may extend to six years and with fine. Section 44 says that whoever contravenes the provisions of section 25 or section 26 shall be punishable with imprisonment for a term which shall not be less than six months but which may extend to six years and with fine. Section 45 provides for enhanced penalty after previous conviction.

Section 47 deals with offences by companies. Sub-section (1) lays down that where an offence under this Act has been committed by a company, every person who at the time the offence was committed was incharge of, and was responsible to the company for the conduct of the business of the company, as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly: provided that nothing contained in this sub-section shall render any such person liable to any punishment provided in this Act if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence, Sub-section (2) says that notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of any Director, Manager, Secretary or other officer of the company, such Director, Manager, Secretary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

(vi) How Does A Board Evolve a Standard?

Instead of evolving their own standards the boards more or less follow the standards prescribed by the Indian Standard Institute (ISI). The Central board, however, follows these standards with minor variations. It has not yet adopted ISI standards for domestic effluent. The state boards generally follows ISI standards without any variation. ISI has developed standards for industrial effluents,[25] sewage effluents[26] and stream standards.[27] Making of standards is a difficult matter and requires consultations with experts and the effected interests. Whereas ISI has fully kept this aspect into account. It has a Water Sectional Committee consisting of the Chairman, CBPOWP (Central Board for Prevention and Control of Water Pollution), and about 33 other members representing various institutions and industries. There is also a Water and Effluents Sub-committee constituted on similar patterns. This does satisfy completely the requirement of "consultations".

The industrial effluent standards approved by ISI are based on the following considerations:

(*a*) The information available from overseas agencies;
(*b*) Techno-economic feasibility of the treatment techniques;
(*c*) Protection of the Environment;
(*d*) Likely damage to the receiving media; and
(*e*) Usage of the receiving waters.[28]

ISI, however, has cautioned that tolerance limits for industrial effluents may vary for each unit depending on:

(*a*) the capacity of the plant;
(*b*) the technology adopted;
(*c*) other industries polluting the receiving system;
(*d*) recipient capacity of the receiving system;
(*e*) the nature of the receiving system, that is, land, river, estuaries, coastal water, etc. and
(*d*) usage of the receiving system.[29]

ISI furthers says: "Therefore, the State Governments, River Boards and other authorities concerned in framing rules regarding industrial effluents, should take into consideration all these factors in arriving at these permissible limits, due considerations should be given to the tolerance limits prescribed in this standard which reflect the consensus of opinion of all concerned interests. It is, therefore, desirable that there should be adequate justification for deviation, if any.

In sum, ISI standards on industrial effluents are not immutable and inflexible, but are to act only as a guide. They may have to be changed depending upon the situation to be dealt with.

ISI had published sewage effluents standards in 1968. At that time, it was laid down that if the quality of the receiving waters was not impaired beyond prescribed tolerance limits, treatment of effluence may not be enforced. This position was changed in 1974. It was decided that "with a view of conserve the quality of environment as much as possible, it is now intended that all effluents must be treated on the basis of techno-economic capabilities prior to discharge into an inland water course".[30]

It appears that ISI has kept pragmatic considerations into account in prescribing various standards. It also appears that in normal circumstances there are minimum standards to be followed but a board may prescribe a higher standard keeping in view the circumstances of a case, and in some cases even lower standards keeping in view such factors as cost of the treatment plant and feasibility, sufficient quantity of water in the stream, lack of human settlement in the area, etc.

ISI has not been content with only laying down effluent standards. As has been emphasised earlier, it is the stream standard which is of value and relevance. ISI has, accordingly, developed the standards for inland surface waters subject to pollution.[31] For purposes of tolerance limits, the waters have been classified into four:

(*a*) Inland surface waters for use as drinking water source without conventional treatment but after disinfection.
(*b*) Inland surface waters for bathing
(*c*) Inland surface waters for use as drinking water with treatment.
(*d*) Inland waters used for first culture and wildlife propagations.[32]

As in the case of industrial effluents the standards prescribed by ISI are variable. ISI points out:

> This standard is intended essentially to help the state governments and the local authorities in deciding on restrictions that may be required on the discharge of industrial and sewage effluents into inland surface waters. Pollution of such waters beyond tolerance limits prescribed in this standard should not be allowed. This standard is also expected to assist the governments and the local authorities in deciding on the siting of the industrial units, the degree concentration of industry at a given place and the mode of discharge of effluents. The authorities should bear in mind that concentration of industry can give rise to situations where although each industrial effluent complies with the relevant standard, the combined effect of all the effluents may pollute the water course beyond limits given in this standard Discharge of effluents on land for irrigation or into public sewers, wherever available and feasible; offers a very desirable alternative to the discharge into inland surface waters and should be encouraged by the local authorities.[33]

Prescribing of standards and giving of consent orders by the boards in an extremely complex exercise requiring deep knowledge of several technical and other factors. The degree of complexity can be imagined from the fact that the following three difficult questions have to be tackled with:

(*a*) Prescribing of domestic or effluent standards itself;

(*b*) deviation from standards indifferent situations; and

(*c*) reconciling of trade or domestic effluent standards with the stream standard.

Every board, therefore, will have to make an independent individual judgement in granting consent orders. In granting consent orders the question is not merely to grant time for a unit to comply with the standards laid down by the board, but the more important question is what deviation should be the baord allow from the prescribed standards. A mechanical approach in this regard will be bad. It seems thus that the board have been following a rule of thumb in following the ISI standards.

Since a board has to make an independent study of its own to determine what variations it should allow from the prescribed standards in a particular case, the function of the board will be quasi-judicial. In other words, the board has to observe principles of natural justice and give a hearing to the party affected. To facilitate fair hearing by the board two suggestions may be made:

(*i*) The board may suitably sub-delegate the function of hearing to a hearing officer/a small body of two or three persons and take the decision itself after considering the report of the hearing officer/body.

(*ii*) The board may not require every industry to apply to it for consent orders (but it should ask every industry to register itself to keep a record of quantity and quality of pollution by it) if the industry is complying with the prescribed standards, except where the board wants to prescribed a different standard. As far as industries are concerned they should apply for consent orders only if they want to follow a lower standard or want extension of time for installing a treatment plant.[34]

In prescribing the standards and giving consent orders the boards have to keep in view the practical aspect of industrialisation so very essential for the economic development of the country. It appears that the central board does keep this factor in view as its annual reports say that the objectives and approach are "control of pollution at the source to the maximum extent possible with due regard to techno-economic feasibility by prescribing Minimal National Standards and such standards as may be required in a particular situation".

It appears from the annual reports of the central board that the board has been following a policy of overseeing compliance of standards for industrial effluents by industries, and prosecuting them for their non-compliance. No action has yet been taken against the local authorities.[35]

(B) The Water (Prevention and Control of Pollution) Cess Act, 1977

The preamble of this Act says that it is an Act to provide for the levy and collection of a cess on water consumed by persons carrying on certain industries and by local authorities, with a view to augmenting the resources of the Central Board and the State Boards for the prevention and control of water pollution constituted under the Water (Prevention and Control of Pollution) Act, 1974. Thus this Act supplements the Water (Prevention and Control of Pollution) Act, 1974.

Section 3 of this Act provides for levy and collection of cess.

(vii) Shortcomings of the Act

These are many shortcomings in the Water Act.[36] Some very relevant
and important terms like pollutants, toxic pollutants, discharge of pollut-
ants etc. are not defined in the Act. The definition of pollution in the Act
does not include pollution of water due to its radiological disintegration.
Similarly, possible offences are not specifically defined and also the pun-
ishments prescribed are not applicable for all probable violations. The
punishments mentioned on the Act are not such as to give a deterrent
effect on the violater. Punishment is provided only if violation is com-
mitted "knowingly". It is not provided for "negligent" acts[37] of the pol-
luter. The fines prescribed are also comparatively small.[38] Whereas im-
prisonment as a punishment is not compulsory in all cases of violations.
The onus of proof and the quantum of evidence required for conviction
are not clearly provided in the Act.

The "consent" procedure as compared to the "permit programme"
under the U.S. Water Pollution Control Act, 1974, is not satisfactory.
There is no compulsory public hearing. For implementing the Act, there
is no specific provision in the Act for public participation. "Citizen suits"
are also not contemplated in the Act. There are no provisions in the Act
for fixing up standards of quality and targets for eradication of pollution.

The Water Act is not supported by any general environmental policy;
whereas in the United States of America it is provided in the National
Environmental Policy Act of 1969. National goals were set up in the
U.S.A. under this U.S. Act. One such goal was to have fresh water every-
where by July 1, 1983. Another goal was to eliminate discharge of pol-
lutants into the navigable waters by 1985. The Water Pollution Control
Boards in India are not supported by such important statements like En-
vironmental Impact Statement (EIS) under the U.S. Environmental Policy
Act 1969 which in turn is supported by the guidelines laid down by the
Council on Environment Quality (CEQ). Sub-section (1) of Section 3 says

that there shall be levied and collected a cess for the purposes of the Water (Prevention and Control of Pollution) Act, 1974 and utilisation thereunder. Sub-section (2) of Section 3 says that the cess under sub-section (1) shall be payable by (*a*) every person carrying on any specified industry; and (*b*) every local authority, and shall be calculated on the basis of water consumed by such person or local authority, as the case may be, for any of the purpose specified in column (1) of Schedule II,[39] at such rate, not exceeding the rate specified in the corresponding entry in column (2) thereof, as the Central Government may by notification in the Official Gazette, from time to time specify. 'Specified industry' means any industry specified in Schedule I.[40]

Section 7 deals about Rebate and says that where any person or local authority, liable to pay the cess under this Act, instals any plant, for the treatment of sewage or trade effluent, such person or local authority shall, from such date as may be prescribed, be entitled to a rebate of 70 per cent of cess payable by such person or local authority as the case may be.

7. JUDICIAL RESPONSE TO CONTROL OF WATER POLLUTION

In *Municipal Council, Ratlam* v. *Vardhichand*,[41] the decision is a historic in the environmental jurisprudence and begins with a tough judicial approach against the municipality's inaction and misaction which boldly and shamelessly wanted to go scot free inspite of committing a crime against humanity as well as against the environment. This is a case where stream water pollution attracted a writ petition. A stream, within the jurisdiction of Ratlam municipality was flooded with dirty water. This polluted water resulted in many public inconvenience. Section 133 of Cr. P.C. was taken to help activise public duty of the municipality under section 123 of the municipal law.

> The court observed that "public nuisance, because of pollutants being discharged by big factories to the detriment of the poor sections is challenge to social justice component of the rule of Law failure of local authorities to provide basic amenity to public conveniences drives the miserable slum dwellers to ease in streets, on the sly for a time, and openly.... A responsible municipal council for the precise purpose of preserving public health and providing better finances cannot run away from its principal duty by pleading financial inability. Decency and dignity are non-negotiable facets of human rights and are a first Charge on a local self governing bodies. Similarly

providing drainage systems in working condition and sufficient to meet the need of people cannot be evaded if the municipality is to justify its existence.[42]

Krishna Iyer J. for himself and for Chinnappa Reddy J. handed down an opinion depending mostly on alien literature. The court ordered the municipal body to see that within a period of six months it was to minimize the problem. A long term scheme costing Rs. 1,016 crores was drawn up which the court cut down to Rs. 6 lakh with the condition that it should be completed within one year with a quarterly evaluation by magistrate. The municipality claimed economic bankruptcy but krishna Iyer J. turned down this plea. The surprising part of this litigation was that the municipality, instead of caring for the health of the residents thought it better to allow environmental litigation to be delayed in courts is this not a sad development where the rakshak (Protector) becomes bhakshak (destroyer)? Justice Krishna Iyer closed his opinion with a warning to the functional irrelevances and inaction that "the wages of violation is punishment, corporate and personal".[43]

In *Satish Sabharwal* v. *State of Maharashtra*[44] the issue of pollution of water took a communal form. An NOC was sought for constructing an abattoir at Bhiwandi, which was granted by the Water Pollution Board without verifying and inquiring into whether such a abattoir would cause an environmental hazard by polluting the nearby drinking water. The main contention raised before the court that (*i*) cows, bulls and buffaloes were to be slaughtered in the abattoir (*ii*) the abattoir was likely to pollute the air giving rise to diseases endangering the health of the villagers (*iii*) the discharge of effluent from the abattoir in the river would pollute the river water which was used for drinking both by the villagers and cattle thereby endangering the life of villagers as well as cattle which is the means of livelihood of the villagers". (*iv*) Prices of land would be reduced on account of pollution thereby preventing the industrial development of the village.

Although the main question was before the apex court as well as the high court about the scope of section 257 of the Revenue Code and power of the state government in exercise of revisional jurisdiction. Ground for under Art 19(1)(g) was raised. Justice G.L. Oza for himself and for chief justice P.N. Bhagwati and Justice V. Khalid speaking on behalf of the court upheld the validity of the contention put forward and dismissed the appeal.

In *M.C. Mehta* v. *Union of India*[45] popularly known as Ganga Pollution (tannery) case is a land mark judgment in the environmental jurisprudence and opens new vista in the direction of protecting environment and pollution caused by hazardous activities of the industries.

The decision is in a case filed against tanneries situated along with the river Ganga, which discharged untreated effluents into the Ganga, causing a grave water pollution problem and problem to the health of the people.

The judgment of the court begins with the importance of the river Ganga in Indian civilization. The court examined in detail the effluent treatment procedures and methods and took into account the studies made by various institutions and experts regarding pollution problems. The most remarkable feature of the judgment is found in Para 14 which contains the finding of the court. Just as an industry which cannot afford paying minimum wages cannot be allowed to exist, similarly an industry which can not treat its effluent and cannot curb environment damages and pollution should not be allowed to exist.

The court has summed up the main causes of pollution of the Ganga precisely as "urban liquid waste (sewage, storm drainage mixed with sewage, human, cattle and kitchen wastes carried by drains etc.). Industrial liquid waste surface run-off of cultivated land where cultivators use chemical fertilizers, pesticides, insecticides and such manures the mixing of which may make the river water unsafe for drinking and bathing. Surface run-off from areas on which urban solid wastes are dumped".[46] Venkataramaih J. observed "under the law of the land responsibility for treatment of the industrial effluents is that of the industry. While the concept of "Strict Liability should be adhered to in some cases, circumstances may require that plans for sewerage and treatment systems should consider industrial effluents as well".[47]

> "The protection and improvement of the human environment is a major issue which affects the well being of people and economic development throughout the world.... Man has constantly to sum up experience and to go on discovering, inventing, creating and advancing. In our time man's capability to transform his surrounding can bring all peoples the benefits of development and the opportunity to enhance the quality of life. Wrongly or heedlessly applied, the same power can do incalculable harm to human beings and the human environment. We see around us growing evidence of manmade harm in many regions of the earth dangerous level of pollution in water, air, earth and living beings; major and undesirable disturbances to the ecological balance of the biosphere; destruction and depletion of irreplaceable resources; and gross deficiencies harm-

> ful to the physical, mental and social health of man in man-made environment, particularly in the living and working environment.[48]

In order to achieve the goal, the Parliament has passed the Water (Prevention and Control) Act, 1974 to provide for prevention and control of water pollution and maintaining wholesomeness of water. Section 24 of the Water Act, 1974 prohibits the use of any stream or well for disposal of polluting matter and provides that no poisonous, noxious or polluting matter determined in accordance with such standard as may be laid down by the State Board enter (directly or indirectly) into any stream or well or sewer[49] or no person shall knowingly cause or permit to enter into any stream or any other matter which may lend to impede the proper flow of the water of the stream leading or likely to lead to substantial aggravation of pollution due to other causes or of its consequences.[50]

The court declined to consider the contention of the tannerie's incapacity and financial inability in setting up treatment plant and Venkataramiah J. made historic observation:

> "The financial capacity of the tanneries should be consider as irrelevant while requiring them to establish primary treatment plans. Just like an industry which can not pay minimum wages to its workers can not be allowed to exist a tannery which cannot set up a primary treatment plant cannot be permitted to continue to be in existence for the adverse effect on public at large....[51]

M.C. Mehta v. *Union of India*[52] (Ganga Pollution by Sewage case) is another leading case related to the water pollution and based on Water Act, 1974 and Environment (Protection) Act, 1986.

It was alleged that municipal bodies had been responsible for pollution of water in the river Ganga by allowing sewage flow into it. It was said that 274.50 million liters of sewage water being discharged daily into the river Ganga from the city of Kanpur. This is the highest amount from the state of U.P. and next only to city of Calcutta which discharges 580.17 million liters of sewage water a day into the river Ganga.

The court observed "that although the Parliament and the State Legislature have enacted many laws imposing duties on the Central and State Boards and the Municipalities for prevention and control of pollution of water, many of those provisions have just remained on paper without any adequate action being taken pursuant thereto. On account of failure of authorities to obey the statutory duties for several years the water in the river Ganga at Kanpur has becomes so much polluted that it can no longer be used by the people either for drinking or for bathing. The Nagar Mahapalika of Kanpur has to bear the major responsibility for the pollution of the river near Kanpur city".[53]

The Supreme Court issued certain direction to the Municipal Corporation Kanpur to control and prevent water pollution. These directions have been stated in paragraphs from 17 to 26 of the judgment but in brief are as under:—

(1) Kanpur Municipal Corporation should submit its proposal for sewage treatment works to the State Board within six months from 12 January 1988 i.e. date of the judgment.[54]

(2) The Kanpur Nagar Mahapalika should take action under provision of the Adhiniyam or the relevant size laws made thereunder to prevent the pollution of the water in the river Ganga on account of the waste accumulated at the dairies. In Kanpur there is large number of dairies in which there are about 80.000 cattle.[55]

(3) The Kanpur Nagar Mahapalika should immediately take action to prevent the collection of manure at private manure pits inside the city.[56]

(4) The Kanpur Nagar Mahapalika should takes immediate steps to increase the size of sewers in the labour colonies so that the sewage may be carried smoothly through the sewerage system. Wherever sewerage line is not yet constructed steps should be taken to lay.[57]

(5) The Kanpur Nagar Mahapalika should immediately take action to construct sufficient number of public latrines and urinals for the use of the poor people in order to prevent defection by them on open land. Further the court directed that the proposal to levy and charge for making use of such latrines and urinals should be dropped as that would be a reason for the people not using the public latrines and urinals. The cost of maintenance of cleanliness of those latrines and urinals has to be borne by the Kanpur Nagar Mahapalika.[58]

(6) The Kanpur Nagar Mahapalika and police authorities should ensure that the dead bodies and half bodies are not thrown into the river Ganga.[59]

(7) Whenever applications for licenses to established new industries are made in future such applications shall be refused unless adequate provision has been made for the treatment of the trade effluents flowing out of the factories. Immediate action should be taken against the existing industries if they are found responsible for pollution of water.[60]

Apart from these directions to the Kanpur Municipal Corporation the Supreme Court made directions to the High Court and Central Government also and observed that the problem of the pollution of the water in the river Ganga had become very acute, so the High Court should not ordinarily grant stay of criminal proceeding in cases under section 482 of

Cr. P.C. and if the stay has to be made in extra ordinary cases, the High Court should dispose of the cases within two months from the date of the their institution.

In order to protect and improve the natural environment which is the Fundamental Duty under Article 51A(*g*) of the Constitution the Central Government should issue directions to all educational institutions all over India to teach one hour a week lessons, atleast, relating to protection and improvement of natural resources, forest lakes, and rivers.

The court further has made it quite clear that directions given to the Kanpur Municipal Corporation applies mutates mutandis to other municipal corporation and municipalities.[61]

In *Pondichery Paper Limited* v. *Central Board for Prevention and Control or Water Pollution*[62] the High Court has held that the Water Act is a social welfare legislation enacted for the purpose of prevention of pollution of water and for maintaining or restoring wholesomeness of water. Therefore, the Act has to be strictly enforced and every effort should be made to carry out the true intent of the legislation. On these principles the magistrate has to act when an application is filed under section 133, Cr. P.C. and it would be for him to determine, according to circumstances and facts of the case, what order he should pass in order to given effect to the provisions of the act and to remove the pollution or prevent it.

Delhi Bottling Co. Ltd. v. *Central Board for Prevention and Control of Water Pollution*[63] the Delhi High Court has taken a different view in case of the petitioner company has been carrying on the business of the preparation of soft drinks. The company was discharging trade effluents which ultimately reached the river Jamuna. It is duty of the petioner company to obtain a consent order under the provision of sections 25 and 26 of the Water Act. A complaint under section 33(1) of the Water Act was filed by the Central Board against the petitioner company. It was alleged that the company had neither set up the treatment plant nor it had taken any preliminary steps in that regard. The magistrate passed an order restraining the company from causing pollution of the river by discharging trade effluents till the required treatment plant was set up, and it confirmed to be the quality of trade effluents according to standards prescribed by the Board in its consent order. This order has been challenged by the petitioner company in the petition filed under section 482, Cr. P.C.

The High Court referred the impugned order to the magistrate and said that "the interpretation of impugned order is that a restraint order has been passed against the petitioners restraining them from discharging their effluents in the stream which does not conform to the quality as per standard prescribed by the Board in and thereby, causing pollution of the stream. We can not read in between the order that a direction has been given to the petitioner under section 33(1) of the Act. Section 33(1) only provides for the passing of restraint order by the court against the company for ensuring the stoppage of apprehended pollution of water in the stream in which trade effluents of the company are discharged. Further, the court observed that 'for non erection of the treatment plant the Board has power to launch prosecution against the defaulting company under the provision of section 41 of the Act'.

Aqua Farm case[64] decision is a land mark judgment of the Supreme Court and a step ahead in direction to protect the water (Sea water). The direction was given by a division bench comprising Mr. Justice Kuldip Singh and Mr. Justice S. Saghir Ahmad on 12 December 1996 disposing a public interest petition by 80 years old social activist Mr. S. Jaganathan for closure of a large number of aqua farms owned by Indian and multinational companies within 500 mtrs to 6,000 km. coast line in the country by March 31, 1997.

These farms covering over an area of 1000,000 acres were producing shrimp prawn both for domestic and exports and were ordered to be closed down as they were causing soil erosion and releasing pollutants directly into the sea.

The court further directed the Central Government to create by January 13, 1997 an authority under section 3(3) of Environment (Protection) Act, 1996 to monitor closing down of aqua farms and would also determine the compensation payable by the owners for causing soil erosion for the last eight years.

The Central Government may constitute an authority or authorities for the purpose of exercising and performing such of powers and functions including power to issue direction under section 5, of the Central Government and for taking measures with respect to such of matters referred to in sub-section (2) as may be mentioned in the order and subject to supervision and control of the Central Government and provision of such order, such authority or authorities may exercise the power or perform the functions or take the measures mentioned in the order as if, such authority or authorities had been empowered to exercise or perform those functions or take such measures.

In *U.P. Pollution Control Board* v. *M/s Modi Distillery*[65] case the question before the Supreme Court was whether the Chairman, Vice-Chairman, Managing Director and Members of the Board of Directors are liable to be proceeded against under 47 of the Water (Prevention and Control Pollution) Act, 1947 in the absence of a company owning the said industrial unit.

Section 47 says, where an offence has been committed by a company under this Act every person who was incharge and responsible of to the company for the conduct of the business of the company at the time of commission of the offense, as well as the company, shall be deemed to be guilty of the offense and shall be liable to be proceeded against and punished accordingly.

Provided that nothing contained in this sub-section shall render any such person that the offense was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offense.

Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any director, manager, secretary or other officer of the company, such director, manager, secre- tary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

In the instant case the facts are M/s Modi Distillery, Ghaziabad is a unit of Modi Industries Limited engaged in business of manufacturing and selling of industrial alcohol and during the process; of manufactur- ing alcohol the industry discharges highly noxious and polluted trade effluents into the kali river through Kadrabad Drain which is stream within the meaning of section 2(1) of the Water Act, 1974. Instead of the com- pany the said unit applied for under section 26, to the Board to obtain consent to discharge trade effluents into the stream. On account of dis- crepancies and in want of proper information regarding names of the Managing Director, Directors and other persons conducting the business of the company, the consent was not granted. After repeated directions from the Board to furnish the particulars in full, the said industrial unit took no initiation and subsequently the Board initiated action under sec- tion 44 of the Water Act, 1974 against the respondent in the court of Chief Judicial Magistrate, Ghaziabad.

A.P. Sen J. speaking for himself and for S. Natrajan J. observed that it is true that there can be no vicarious liability of the Chairman, Vice- Chairman, Managing Director and member of the Board of Directors under sub-section (1) or (2) to section 47 of the Act unless company owning the industrial unit is prosecuted. However, where the industrial unit itself willfully failed to furnish the requisite information to the Board regarding the particulars and names of the Managing Directors, Directors and other persons responsible for the conduct of the company resulting in mentioning incorrect name of the company in complaint, it was not open to them to take advantage of the lapse of their own industrial unit and claim that prosecution be quashed against them. The technical flaw of describing the name of the company wrongly could be rectified by amending the complaint accordingly.

Thus, the court clearly reversed the judgment of *K.N. Modi* v. *State of U.P.*[66] and *State* (*Delhi Administration*) v. *I.K. Nagia*[67] and held that on combined reading of the provisions contained in sub-section (1) & (2), there is no doubt whosoever the Chairman, Vice-Chairman, Managing Director and member of the Board of Directors of M/s. Modi Industries Limited, the company owing the industrial unit. M/s. Modi Distillery could be prosecuted as having been incharge of and responsible to the company for business of industrial unit M/s. Modi Distillery and could be deemed to be guilty of the offence with which they are charged.

Increased tendencies of industrialization and urbanization, mounting pressure of population increasing at alarming rate, and mushrooming colonies have posed threat to ecological balance and environment. Although, through active involvement of government agencies and non-government agencies and also of courts, people awakening to protect our environment is increasing. But it is regrettable that the Parliament enacted the Water (Prevention and Control of Pollution) Act, 1974 to meet the urgent need for introducing a comprehensive legislation with its established unitary agencies in the centre and state to provide for the prevention, abatement and control of pollution of rivers and streams for maintaining wholesomeness of water courses and for controlling the existing and new discharges of domestic and industrial wastes. Still, pollution is increasing constantly which is a matter of grave national concern for all of us.

Indian Council For Enviro-Legal Action v. *Union of India*,[68] the Supreme Court has tried to trace out the lacuna which causes problem to proper awareness of environmental law and suggested steps so that the culprits may not escape from legal action. In this case it was held that:

> "With rapid industrialization taking place, there is an increasing threat to the maintainance of ecological balance. Even though, laws have been passed for protection of environment, the enforcement of the same has been tardy, to say least. With the governmental authorities not showing any concern with the enforcement of the said Acts, and

with the development taking place for personal gain at the expense of environment and with regard to mandatory provisions of law, some public-spirited persons have been initiating public interest litigation. The legal position relating to exercise of jurisdiction by the court for preventing environmental degradation and thereby, seeking to protect the fundamental rights of the citizens, is now well settled. The courts, in a way, act as the guardian of the people's fundamental rights but in regard to many technical matters, the court may not be fully equipped. Perforce, it has to rely on outside agencies for reports and recommendations.... it is not the function of the court to see the day-to-day enforcement of law, that being the function of the Executive, but because of non-functioning of enforcement agencies, the court as of necessity have had to pass orders directing the enforcement agencies to implement the law.[69]

"Due to sheer negligence on part of the legal advisors in drafting the complaint a large business house is allowed to escape the consequences of the breaches committed by it of the provisions of the Act with impunity. It was expected that the Board and its legal advisors should have drafted the complaint with greater circumspection not to leave any technical flaw which could invalidate the initiation of prosecution allowing the respondents to escape the consequences of the breaches committed by them of the provisions of the Act with impunity".[70]

Indian Council for Enviro-Legal Action v. *Union of India*,[71] the Supreme Court on Feb. 13, 1996 ordered closure of the five hazardous chemical industries located in Bichhri village in Udaipur District of Rajasthan and attached their all moveable and immovable properties, after holding them responsible for inflicting untold misery upon the villagers and causing further long lasting damage to the environment in the area.

The facts of the case were related to free flow of untreated toxic sludge of chemical industries which caused pollution to water, soil, and air. The toxic substances and pollutants had percolated deep into the bowels of the earth polluting the aquifers of sub-terranean supply of water. The water in the wells and the streams had turned dark and dirty rendering it unfit for human consumption.

Mr. Justice B.P. Jeevan Reddy speaking for himself and for Mr. Justice B.N. Kirpal relied heavily on the rule laid down in *M.C. Mehta* v. *Union of India*,[72] popularly known as *Oleum Gas Leak case* that once the activity carried on is hazardous or inherently dangerous, the person carrying on such activity is liable to make good the loss caused to any other person by his activity irrespective of the fact whether he took reasonable care while carrying on his activity is by far the more appropriate one and binding. The rules is premised upon the very nature of activity carried on. Such an activity can be tolerated only on the condition that enterprise engaged in such hazardous or inherently dangerous activity indemnifies all those who suffer on account of the carrying on of such hazardous or inherently dangerous activity regardless or whether it is carried on carefully or not. The reason for such rule the Supreme Court says that "It is that enterprise (carrying on the hazardous or inherently dangerous activity) alone has the resource to discover the guard against hazards or dangers — and not the person affected and the practical difficulty (on the part of the affected person). In establishing the absence of reasonable care or that the damage to him was foreseeable by enterprise".[73]

Mr. Justice Reddy further observed on behalf of the court that "Since chemical industries are main culprits in the matter of polluting the environment, there is very need for scrutinizing their establishment and functioning more rigorously. No distinction should be made in this behalf as between the large scale industry and small scale industry for that matter between a large scale industry and medium scale industry. All chemical industries whether big or small, should be allowed to be established only after taking into consideration all the environmental aspects and their functioning should be monitored closely to ensure that they do not pollute the environment around them. It appears that most of these industries are water intensive industries. If so, the advisability of allowing the establishing of these industries in arid area may also require examination. Even the existing chemical industries may be subjected to such study and if it is found on such scrutiny that is necessary to take any step in the interest of environment, appropriate direction in that behalf may be issued under sections 3 & 5 of the Environment Act".[74]

The division bench of the Supreme Court in 83 — page judgment on public interest petition characterized the five chemical industries namely Hindustan Agro Chemical Ltd., Silver Chemicals, Rajasthan Multi Fertilizers, Phosphate India and Jyoti Chemicals as "rogue industry"[75] as they had continuously, persistently and insolently violated the law, attempted to conceal poisonous sludge, discharge highly toxic effluents and failed to implement orders of the apex court over several years.

These industries has inflicted untold misery upon the poor, unsuspecting villagers, despoiling their land, their water resources and their entire environment — all in pursuance of their private profits. And so the court clearly has stated that they have forfeited all claims for any compensation by this court. Accordingly the court ordered for closure of all plants and industry and asked the Rajasthan Pollution Control Board to seal all the factories of these industries forthwith.

The court took the question of liability of the respondent from the another angle and stamped the validity of the "Polluter Pays" principle. Thus the court said :

> "The polluter pays principle demands the financial costs of preventing or remedying damage caused by pollution, or produce of goods which cause the pollution under the principle, it is not the role of the Government to meet the cost involved in either prevention of such damage, or in carrying out remedial action, because the effect of this would be to shift the financial burden of the pollution incident taxpayer."[76]

In the case of industries located in Delhi causing pollution to the environment the Supreme Court ordered closure of 513 industries located in Delhi in the thickly populated area which were engaged in carrying on hazardous activities, by January 31, 1997 and gave them option to shift in the national capital region. The direction given by a division bench comprising Mr. Justice Kuldip Singh and Mr. Justice S. Saghir Ahmad on a public interest petition by a noted environmentalist and lawyer M.C. Mehta to the Deputy Commissioner of Police concerned to effect the closure of the industrial unit w.e.f. February 1, 1997 and to file a compliance report in the apex court within 15 days thereafter. The court made it clear that the closure should be unconditional. Even if relocation of industries was incomplete, they should stop functioning in Delhi w.e.f. February 1, 1997.

Earlier, the counsel for Delhi Pollution Control Committee submitted that in pursuance to an earlier order of the Apex court, the committee had issued individual and public notices to 758 industries out of them 288 industries filed their objection and 470 industries did not respond to its notices. Objection of 40 industries were rejected by the committee after following the appropriate procedure. After hearing counsel the judges directed that it may pass appropriate orders in respect of 513 hazardous industries and the workmen shall have continuity of employment at the new town and place where the industries are shifted. Their terms and conditions of their employment shall not be ultered to their detriment.

On November 15, 1996 the Supreme Court through the division bench comprising Mr. Justice Kuldip Singh and Mr. Justice S. Saghir Ahmad ordered that 1,219 highly polluting industries of Delhi may approach to

Central Pollution Control Board within a week if they were aggrieved by an order of the Delhi Pollution Control Committee. The order classified them as highly polluting industries belonging to "H" category and the court further observed that the court would keep in mind the interest of workers and management of the industries.

In *Attakoya Thangal* v. *Union of India*,[77] the petitioner challenged government's scheme to draw out ground water with the help of mechanical pumps in the Lakshadeep Island. The petitioner relied on scientific studies conducted by NEERI and Centre for Earth Science Studies which confirmed that the ground water tapped by mechanical pumps would deplete the only fresh water source in island beyond repair and salination of wells and water table. If this scheme is implemented, the natural resources can never be replaced by recycling.

The court accepting the contention of the petitioner based on observations of the Supreme Court in *Shri Sachidanand Pandey* v. *State of West Bengal*[78] held that every triumph that men make over nature, she takes her revenge. The petitioner's contention was with the growing need for more water. It is not possible to content with the available sources of water and low environmental sanitary conditions and prevalence of water diseases make it necessary to introduce a scheme of protected water supply. The available water is of bad quality and purification is necessary according to the respondent. The infiltration will be located only at shallow depth and that water will only be skimmed from the surface of available resources, guarding against excessive withdrawals.

The court directed the Central Ground Water Board to investigate into the aspect raised which submitted that:

(1) Extractable ground water potential is around 0.22 MCM of which the present draft is around 0.18 MCM.

(2) Salt water intrusion is observed around pumping centres and that the salt water/fresh water interface was moving inland wherever pumping was more. Hence pumping of ground water should be stopped by legislation.

(3) The ground water level and quantity should be continuously monitored.

The court observed that expressed view was that proposed water supply scheme is not feasible. More or less similar are the recommendations and findings of NEERI, CESS and other agencies. There is agreement among the agencies that existing ground water sources are limited and excessive withdrawal will upset fresh water equilibrium leading to salinity and diminution of potable water, and thus new source must be identified for augmentation.

Further, Sankaran Nair J. observed that the executive government has onerous responsibilities in the matter of providing civil amenities. The technocrat too had his role to play, in view of the impact the matter has on environmental and hydrological concerns. There must be an effective and wholesome interdisciplinary action. The administrative agency can not be permitted to function in such a manner as to make inroads into fundamental right under Article 21. A prioritisation of human needs and the new value system has been recognised in these areas. The right to sweet water, and the right to free air, are attributes of right to life and these are the basic elements which sustain life itself.

In *Subhash Kumar* v. *State of Bihar*,[79] the Supreme Court through a division bench comprising Mr. K.N. Singh and Mr. N.D. Ojha JJ. delivered a land mark judgment in the field of environmental jurisprudence recognising wholesome environment a fundamental right. The submission before the apex court under Article 32 is to order to the Director of Collieries, West Bokaro Collieries at Ghatoland, District Hazaribagh in Bihar and TISCO Ltd. to stop discharge of slurry/sludge from its washeries into the Bokaro river. The court observed regarding the scope of the fundamental right enshrined in Arts. 21 & 32 of the Constitution as under:—

> "Article 32 provides for an extra ordinary procedure to safe guard the fundamental rights and it is designed for enforcement of the fundamental right of a citizen. Right to live is a fundamental right under Article 21 of the constitution and it includes the right of enjoyment of pollution free water and air for full enjoyment of life and if any thing endangers or impairs the quality of life in derogation of laws, a citizen has right to have recourse to Article 32 of the constitution for removing to polluting of water or air which may be detrimental to the quality of life".[80]

The court has thus found that the petition was not field keeping in mind the public interest but to avenge the loss of a contract to transport and dispose of additional slurry and sludge and observed that the petition under Article 32 for prevention of pollution is maintainable at the instance of affected persons or even by a group of social workers or journalists. But recourse to proceeding under Article 32 of the Constitution should be taken by a person genuinely interested in the protection of society on behalf of the community. Public Interest Litigation cannot be invoked by a person or body of persons to satisfy his or its personal grudge and enmity. If such petitions under Article 32 are entertained. It would amount to abuse of the court preventing speedy remedy to other genuine petitioners from this court. Public Interest Litigation contemplates legal proceeding for vindication or enforcement of fundamental rights on account of their incapacity, poverty or ignorance of law. A person invoking the jurisdiction of this court under Article 32 must approach this court for the vindication of the fundamental rights of affected person and not for the purpose of vindication of the personal grudge or enmity. It is the duty of his court to discourage such petitions and to ensure that the course of justice is not obstructed or polluted by unscrupulous litigants by invoking by extra ordinary jurisdiction of this court for personal matter under garb of the public interest litigation.[81]

The court dismissed the petition rejecting the contention raised by the petitioner and held that the intention of petitioner was to revenge against the loss of contract to transport and dispose of slurry/sludge and there was no public interest involved in it.

In *Rajiv Ranjan Singh alias Lallan Singh* v. *State of Bihar*[82] the complaint was filled on the basis of the report published in the daily "Raviwar" before the Patna High Court under Article 226 of the Constitution of India that M/s Shiv Shankar Chemical Industries Pvt. Ltd. Bhagalpur engaged in manufacture and production of ethyl alcohol (rectified spirit) had been discharging untreated effluents, chemical wastes and sewage resulting into contamination of water resources and polluting the environment and thereby seriously affecting not only crops and castle but also the health and well-being of people living in villages and its vicinity. Thus, the right citizens confirmed under Article 14 and 21 and provision under Directive Principle of State Policy under Article 47 and Article 46A are infringed.

The court relied on the report submitted by expert committee and came harshly upon the chemical company stopping the manufacturing process in the distillery. But later on, the court directed to restart the manufacturing process subject to the condition that an officer not below the rank of secretary of a Government department nominated by the Chief Secretary and subsequently approved by the Chief Minister and Chairman of Bihar State Pollution Board, order for manufacturing process on the terms and condition they deemed fit. The constitution of the committee and inspection of the distillery having been delayed somewhat, the respondent no. 5 i.e. M/s Shiv Shanker Chemical Industries Pvt. Ltd. filed two writ petition to get the manufacturing restarted. Before the petition could be fixed for hearing, the Government relying on first report ordered under section 5 of Environment (Protection) Act, 1986 to the company to close their operations.

Section 5 of the Act says that the Central Government may issue direction in writing to any person, officer or any authority subject to the provision of this Act :

(*i*) the closure, prohibition or regulations of any industry, operation or process, or

(*ii*) Stoppage or regulation of the supply of electricity or water or any other services, and such person so directed shall be bound to comply with the direction.

The second report was submitted by the Department of Forest and Environment and fortunately the second report noted that water in well of village Raipura were clean and without odour. The committee accepted that pollution would be more in the nature of an irritating nuisance than health hazard and allegation of pregnant women aborting due to foul smell was not acceptable. The committee concluded that the distillery can not be absolved of a responsibility of setting of regular effluent treatment plant. The committee in second report recommended to restart the distillery on the director's promise to set up the effluent treatment plant with nine months after the amount of loan sanctioned to them. But the committee suggested certain interim arrangements till the final treatment plants were installed:

(1) To set up properly designed lagoons, double-lined by polythene sheets to avoid pollution of ground water and holding capacity equivalent to 100 days effluent discharge.

(2) To fence the area where lagoons exists or would be further dug up upto five feet by pucca wall or seven strand barbed wire to check the entry of cattle or human.

(3) To separate chemical industry and Raipura village by five meters high and 150 meters long dyke with close plantation on the top of the slope to limit the odour reaching Raipura at the cost of chemical industries.

(4) To provide two deep tube wells for villagers at the cost of chemical industry.

Considering all these points, the division bench comprising of Mr. Justice S.B. Sanyal and Mr. Justice Aftab Alam observed that the scheme envisaged that chemical company might be allowed to restart the manufacturing process in its distillery on completion of interim arrangement and the process of restarting might not be delayed that the setting up dyke and planting of trees were not complete but steps for material progress in that direction would be sufficient. But all other conditions might be completed before the manufacturing process restart.

The court clarified that the decision to allow the distillery to start its manufacturing process with adequate safeguards and on fulfillment of above conditions is based on the undertaking given by the chemical company which is on line with the Supreme Court's decision in *M.C. Mehta* v. *Union of India*[83] that it is necessary to strike a balance between the necessity to preserve the environment on the one hand and pressing need for the industrialization of this backward state.

Further more the court directed that in case it comes to light that any person has contracted any ailment, the cause of which is directly related to effluent discharged by the distillery, the company shall have to bear all expenses of his treatment and the question of awarding suitable compensation to the victim may be considered.

Shri Francises Joaquim Das Dores Barreto Alias Francisco Barreto v. *Central Board of Prevention and Control of Water Pollution*,[84] is a case of industrial pollution of sub-soilwater. Facts are Zuari Agro Chemical, a fertilizer manufacturer discharged untreated effluents into the sea through pipes which had corroded over the years. The effluents seeped into the subsoil and water of Baretto's property. This destroyed and uprooted the coconut plantation in Barreto's property. The company also released fumes of high ammonia concentrate which burnt down proportions of this coconut grow. Barreto filed a suit in the District court, Goa seeking an injunction against the company discharging effluents fumes. Although frequent inspections undertaken by the Board and Agricultural Department confirmed that the pollution was of serious nature had existed but no steps were taken in the direction to control or mitigate the pollution. Eventually the court held that Barreto was not entitled to injunction as he had already accepted Rs. 300,000 as compensation for damage caused. The High Court and the Supreme Court declined to interfere with the order of the learned District Judge saying that was an interlocutory order.

Points to be considered in this case are that:—

1. Barreto accepted Rs. 3 Lakhs as compensation but even after that pollution continued and damage aggravated. This gives rise to the 'recurring tort' and so every subsequent release of fumes and smoke gives rise to new cause of action and compensation should not be considered as the adequate major in this case of recurring tort. Hence , the court should have considered Barreto entitled for injunction and not for damages.
2. It was proper and appropriate major to file a writ petition in the High

Court while the petition has sufficient and adequate evidence that the Pollution Control Board and other Environmental Departments were guilty of dereliction of duty.

The plea of infringement of fundamental right guaranteed under Article 21 of the Constitution should have been taken by the petitioner and he must have prayed for a writ of mandamus to compel the government authorities to perform the duty and abate the pollution.

In *M/s. Narula Dyeing & Printing Work* v. *Union of India*[85] the petitioner challenged the action of the State Government taken under section 5 of the environment Act, 1986 giving direction to them to stop the production activities and to take necessary steps to make the waste water being discharged by the units to conform to the standards specified by the Gujarat Pollution Control Board and not to restart the production activities without the permission of the State Government and Forest & Environment Department.

R.K. Abichandani J. who passed the order has held as under :

"The Environment (Protection) Act, 1986 was enacted with a view to provide for the protection and improvement of environment and for matters collected therewith. India had participated in the decisions taken at United Nations Conference on the Human Environment held at Stockholm in June 1972 to take appropriate steps for protection and improvement of human environment. For implementing these decisions in so far as they related to protection and improvement of environment and the prevention of hazards to human beings, other living creatures, plants and properties, the said Act was enacted. An urgent need was felt for the enactment of a general legislation on Environmental protection, which should enable inter alia speedy response in the event of accidents threatening environment. The fundamental directives of state policy enshrined under Article 48A of the Constitution of India enjoined a duty on the state to protect and improve the environment and to safeguard the forests and wildlife of the country. The fundamental duties of every citizen enumerated in Article 51A of the constitution includes duty to protect and improve the natural environment including forests, lakes, rivers and wild life and to have compassion for living creatures".[86]

Keeping these laudable objects in view section 5 of the Act provides as under:—

"Section 5 — Power to give directions:— Notwithstanding anything contained in any other laws but subject to the provision of the Act, the Central Government may, ... issue directions in writing to any person, officer or any authority and such persons, officer or authority shall be bound to comply with such directions.

Explanation:— ....

(*a*) the closure, prohibition or regulation of any industry, operation or process; or

(*b*) stoppage or regulation of the supply of electricity or water or any other service".

The guidelines for exercise of power under the said provision of issuing direction are to be drawn from the nature of powers conferred on the Central Government and nature of its functions as prescribed under the Act. Under section 6 of the said Act, the central Government is empowered to make Rules in respect of all or any of the matters referred in section 3. Section 3 provides for power the Central Government to take measures to protect and improve the environment, the Central Government has power to take measures as it deems necessary or expedient for the purpose of protecting and improving the quality of environment and preventing, controlling and abating environmental pollution and this power includes taking up measures for laying down standards for emission, or discharge of environment pollutants for various sources whatsoever.[87]

Rejecting the petition the court has observed that biochemical oxygen demand test is widely used to determine the pollutional strength of domestic and industrial wastes in terms of oxygen that they will be discharged into natural water courses in which aerobic conditions exist. Similarly, chemical oxygen demand test is widely used for measuring pollutional strength of domestic an industrial wastes. This test allows measurement of wastes in terms of the total quantity of oxygen required for oxidation to carbon-dioxide and water. The trade effluents which contained various characteristics in excess of tolerance limit would undoubtedly ruin the fertility of soil of which they come to be released and release of such trade effluents in Khari — cut canal which is meant for irrigation of lands obviously would result in damage to the crops and the fields to which polluted water was being carried. This naturally called for immediate action and if the state government became suddenly aware of its duties and took action for preventing further damage to the crops and agricultural lands, it cannot be said that there was justification for such action because it was not taken earlier. The gravity of the situation was in the extent of damage which was resulting due to discharge of such effluents.[88]

In *Haryana Tourism Corporation Limited* v. *Haryana State Board for the Prevention and Control of Water Pollution*,[89] challenged herein by the Haryana Tourism Corporation Limited, Chandigarh is to issue notices annexure P-1 and P-4 whereby it was asked to pay Cess under the Water (Prevention and Control of Pollution) Cess Act, 1977 and in default thereof, to pay a penalty of 100% on the amount due.

A division bench comprising of Mr. G. C. Garg and A. L. Bharti has observed on behalf of the court that a bare reading of the provisions of the said Act show that Cess is payable by local authority such as the municipal corporation or contonment board which supply water to its residents in the local areas of their jurisdiction. It does not apply to such persons who draw their own water, say, by installing tubewell and then supply in the houses or the complexes where some visitors also happen to come and stay. It is not duty of such authority or a body to supply water under any provisions of law. The petitioner Haryana Tourism Corporation is drawing water for its own consumption and is not entrusted with the duty to supply water to others. Merely, providing the amenity of water to the visitors coming and staying in the complexes, by the petitioner corporation cannot meant to hold that is entrusted with the duty of supplying water to them under the law. Supply of water is an amenity provided to the persons coming or staying in the complexes and not a duty castes upon the authorities to supply water under any provision of law. The petitioner corporation is therefore not liable to pay Cess under the Act.

In *M/s Mahabir Soap and Gudakhu Factory* v. *Union of India*[90] the facts are that the petitioner is operating a factory, for manufacturing tobacco tooth paste commonly referred a Gudakhu, located in thickly populated area of Kantabanj town. The petitioner has not obtained the consent as required under sections 25 and 26 of the Water (Prevention and Control of Pollution) Act, 1974. The under secretary to the Government of India issued notice to the petitioner that he was carrying on tobacco processing operations in the unit which is operating without consent of the State Pollution Control Board in violation of the Water Act, 1974 and which was generating highly polluted effluents resulting in pollution of water reservoir which is used for human consumption.

The case involves interpretation and interplay of the relevant provisions of the Environment Act, 1986 and rules framed under it and the Water Act, 1974.

Power has been conferred on the Central Government to take measures as it deems necessary or expedient for protecting and improving the quality of the environment and preventing, controlling and abating environmental pollution.[91] Further, certain matters have been enumerated relating to which measures may be taken by the Central Government[92] and power has been also conferred to for restriction on areas in which any industries, operations or processes or class of industries, operations or processes shall be carried out or shall be carried out subject to certain safeguards.[93]

Section 5 confers power on the Central Government to issue direction to any person, officer or any authority in writing for the closure, prohibition or regulation of any industry, operation or process; or the stoppage or regulation of supply of electricity or water or any other services. No person carrying on any industry, operation or process shall discharge or emit or permit to be discharged or omitted by environmental pollutants in the excess of standards prescribed. Further, the Act empowers the central government to delegate all or any of its power under the legislation to any officer, state government or authority.

Section 24 of the Environment (Protection) Act, 1986 provides that rules or order made under the Act shall have effect notwithstanding anything inconsistent therewith contained in any enactment other than the Environment (Protection) Act, 1986 and any Act or omission constitutes an offence which is punishable under this Act and also under any other Act, the same would be punishable under the other Act and not under this Act.

The Rule 4 of the Environment (Protection) Rules, 1986 lays down the procedure and manner of issuing direction under section 5 of the Act. Sub-rule (3-*a*) or Rule 4 provides to give an opportunity of not less than 15 days from the date of service of a notice to file objection with an officer designated on this behalf and to serve with a copy of proposed direction to the person, officer or authority to whom notice is sought to be issued.

Sub-rule (3-*b*) provides where proposed direction is for the stoppage or regulation of electricity or water or any other services affecting the carrying on the industry, operation of process is sought to be issued to an officer or an authority, a copy of the proposed action shall also be endorsed to the occupier of the industry, operation or process and if any objection filed by occupier with an officer designated shall be dealt with in accordance with the procedure under sub-rule (3-*a*) and (4) of this rule.

Section 24(1)(*a*) of the Water Act, 1974 provides, *inter alia* that no person shall knowingly cause or permit any poisonous or noxious or polluting matter determined in accordance with such standards as may be laid down by the state Board to enter (whether directly or indirectly), into any stream or well or sewer or on land.

Section 25(1) provides that no person without the consent of the State Board shall establish or take any step to establish any industry, operation or process, or any treatment or disposal system or any extension or addition thereto, which is likely to discharge sewage or trade effluent into a stream or well sewer or on land. Sub-section (4) of section 25 provides that the State Board may grant its consent referred in sub-section (1) subject to such condition as it may impose or refuse such consent for reason to be recorded in writing.

So, the court has observed that there is little scope for doubt that it was within the power and competence of the Central Government to issue the direction to close the petitioner's industrial unit and to disconnect supply of electricity or water and to restrain the petitioner from restarting the unit till all the pollution control measures are taken to ensure that the effluent discharged from the unit meet the prescribed standards and after obtaining the prior approval of the Central Government. It is within the power of the State Board to reject petitioner's application for consent under section 25 of the Water (Prevention and Control of Pollution) At, 1974.[94]

In *Mathew Lukose* v. *Kerala State Pollution Board*[95] case, where the company runs a factory where in Calcium Carbide and Acetylene black are produced in large quantities and it is alleged that slurry is discharged into neighboring streams and the discharge percolates into neighboring wells polluting potable water, besides causing silting in the navigable canal. It is alleged further that the effluent discharged make an adverse impact on aquatic life. Gaseous emissions pollute the air and so do suspended particulate material in ambient air and pulmonary diseases and other ailments are caused by the atmospheric pollution.

Mr. Justice Shankaran Nair who delivered the judgment and considering the various provisions of the water Act, 1974 the Air Act, 1981 and the Environment (Protections) Act 1986, has rightly observed as under:

> "pollution in high seas leading to degradation of marine environment has been observed in recent years. The seas of the world have been becoming global grounds. Industrial wastes pose a threat to Biota of the sea. A conference on dumping held in London in 1972 resolved against dumping or mercury, cadmium compounds, organhalogen compounds, plastics and crude oil and certain other synthetic materials and petroleum products into oceans. Convention of laws on seas 1982, engrafts regulatory measures, in the back ground of the experience of Torry Canyon and Shanta Barbara leading to spillage of 1.5 million tonnes of oil in the sea."[96]

"Inland water pollution is largely due to discharge of chemicals like Sulphates, Fluorides, chlorine and Mercury into streams and rivers, and use of pesticides of lands close to water sources. The Hoogly Estuary into which 150 industries discharge effluents, is an example of this. Water borne diseases are caused by water pollution".[97]

In *V. Lakshmipathy* v. *State of Karnataka*[98] the petitioners are aggrieved by location and operation of industries and industrial enterprises in a residential area in alleged gross violation of the provisions of the Karnataka Town and Country Planning Act. The people have also complained of the serious threat to public health on account of environmental hazards posed by the industries and industrial activities. The petitioners further alleged that the residents of the area have a right to expect strict performance of statutory duties in order to protect public interest by public bodies invested with statutory obligations.

Mr. Justice H.G. Balakrishna who delivered the judgment has said in regard to the preservation of environment as under:

> "The movement for restorations and maintenance of a livable environment requires curbing the power of narrowly oriented administrative agencies in the appropriation of the dwindling acreage of land and water not already irrevocably appropriate. There have been several proposed and discussed means of easing of burdens and handicaps of the substantial evidence rational basis rule in environmental cases involving judicial review of administrative agency determinations. Some are based upon concepts found in environmental cases and other cases and also explained and analysed by the acknowledged critical authorities. Others are based not upon authorities but on the sheer importance of the interests affected, for e.g. as documented in the National Environmental Policy of India".[99]

"The explosion of grave concern for environment at any private and Government level is the great political phenomenon of recent times. The sporadic and unorganised struggle of environment strugglers, the wildlife and bird lovers, wilderness wanderers have identified the conservation movement of the environment and are focussing their attention to denuded forests, balding hills, disappearing prairies, extinct species of rare fish, thinning wild life and vanishing birds. The movement has become the crusade of anyone almost everywhere for a "livable environment." There is an increasing awareness that in leaning up our environment, of not in wilderness, like the preservation of the world".[100]

Commenting on business corporation and environment protection. Robert Reinow a professor of political science at the State University of

New York, Albay observed:—

> "But worse than corporation funding is the subversion of Government agencies to the role of environmental exploiter. The public interest which should be championed by the agencies with their regulations is ignored or perverted, as the "Iron triangle" or special interests, bureaucrats and committee chairperson from their unholy alliance. This means that the public conscience is entrusted to volunteers in public interest groups, a sacrificial burden of weighty dimensions".[101]

Inserted by the constitution (Forty-Second Amendment) Act, 1976, Art. 48-A lays down that the state shall endeavor to protect and improve the environment and to safeguard the forests and wild life of the country.

Art. 51-A(*g*) exhorts the citizen to protect and improve the natural environment including forests, lakes, rivers, and wild life to have compassion for living creatures.

Part IV-A on Fundamental Duties has been added by the constitution (42nd Amendment) Act 1976, in accordance with the recommendations of the Swarn Singh committee bringing the constitution in line with Art 29(1) of the Universal Declaration of Human Rights and Constitution of China, Japan and U.S.S.R.

> "The mandate of our constitution is to build a welfare society and legislations made that behalf to give effect to Directive Principles of State Policy have to be respected. If the constitutional obligations are not discharged by due enforcement by the administrative agencies, the court cannot turn a Nelson's eye. The fundamental duties are intended to promote peoples participation in restructing and building a welfare society and the Directive Principles under Part IV are intended to build the edifice of welfare state. Environment and its preservation is subject matter of both, thus emphasising the importance given to it by our constitution. Protection of environment is a matter of constitutional priority. Neglect of it is an invitation to disaster. The problem is the concern of every citizen and action brought cannot be dismissed on the ground of *locus standi*. The right to sue in this regard is inherent in the petitioners. When administrator do not mend their ways, the courts become the battle ground of social upheavel. The paradigm of bureaucracy conducive to public welfare features standard operating procedures, human outlook, hierarchical authority, prompt law enforcement besides job specialization and personnel rules among others. If the administrators show indifference to the principle of accountability, law will become a dead-letter

on the statute book and the public interest will be the casualty. Entitlement to a clear environment is one of the recognised basic human rights and human rights jurisprudence cannot be permitted to be thwarted by status quoism on the basis of unfounded apprehensions".[102]

In *Mahmud Ali* v. *State of Bihar*[103] the Patna High Court was invited mainly to answer on two points:—

(1) Whether Sec. 47(1) of the Water (Protection and Control of Pollution) Act, 1974, necessarily mandates the incorporation of the words "he was in charge and was responsible to the company for the conduct of the business of the company", in all complaints against a Chairman, Managing Director or General manager of the company for offenses in contravention of the said Act?

(2) Whether Sec. 47(2) of the Water (Prevention and Control of Pollution) Act, 1974 inflexibly mandates the incorporation of the allegation that the offence was committed with the consent or connivance or was attributed to the neglect on the part of the Chairman in or Managing Director or General Manager of the company in the complaint itself.

The answer to question No. (*ii*) is rendered in the negative. It is held that S. 47(2) does not mandate the incorporation of the allegation that the offence was committed with the consent or connivance or was attributable to the neglect on the part of the Chairman, Director or General Manager of the company, in the complaint itself.

K.K. Nandi v. *Amitabha Banerjee*[104] is another case in which the Calcutta High Court did not allow the offending company to take advantage of hyper technical arguments to escape criminal liability. The respondent had filled a complaint under Sec. 47 of the Water (Prevention and Control) of Pollution Act, 1974, against K.K. Nandi and other directors of a brewery. The directors opposed the complaint by pleading that the compaint did not contain a specific averment that they were guilty of this offence under the act and were therefore criminally liable for the same. The court held that it was not necessary to plead the commencement of an offence separately Sec. 47 provided that of a company was guilty of an offence it will be deemed that the director manager etc. in charge of the Company's affairs are guilty of the offence. Further the Court held that the petitioners plea was too technical and it would be inappropriate and selfdefeating to interpret a beneficial legislation in this manner.

M.V. Arunachalam v. *Tamil Nadu Pollution Control Board, Madras*[105] is an important decision for activists and for Pollution Control Board offi-

cials. The petitioner was a director of a cycle manufacture. The company
had many units. The company discharged such noxious substance that it
resulted in the instantaneous death of cattle. Conscious of the fact that
they may be held liable the petitioners took advantage of the fact that
there were several units registered under separate names although they
were all part of the same company to evade liability. The controlling personnel of all these units were a handful of persons holding different
posts in different units. The set up was confused and complicated in a
manner so that liability could not be pinned to a certain person. Permissions and No Objection Certificates obtained by one unit were used for
running others. The Pollution Control Board sought clarification before
initiating action but received evasive replies. What strike us at this point
is that the all powerful Pollution Control Board, whose duty it is to grant
permission and NOCs, itself seeks clarifications regarding permission
and NOCs. This displays a negligence on part of the Board in granting
the NOC and permission. Eventually, the Board launched a prosecution.
Predictably the company took advantage of the self-created confusion
and pleaded the complaint be dismissed for non-joinder of necessary
parties, and a complaint could not be sustained as it was filed against the
managing director of the main company and the board had failed in
identifying the offending unit. Relying on the Modi Distilleries case the
Madras High Court held that no curable technical infirmity in a prosecution will be allowed to nullify the object and aim of the prosecution.
That a grevious offence of poisoning water cannot be defeated by a
technical impediment purposely created by a party. This interpretation
befits a beneficial statute which seeks to bring offenders to the book.
Another lesson is for the Pollution Control Board Officers who must be
vigilant at the time of granting NOCs and permission which would avoid
these complications.

In *M/s Ambuga Petrochemicals Ltd.* v. *A.P. Pollution Control Board*[106]
the matter was related to section 33A of the Water Act 1974. The treat-
ment plant of the factory was not functioning properly and partially
treated effluents were discharged into tank which ultimately caused dan-
ger to the life and health of public at large.

The court held that the Board is competent to issue direction depend-
ing upon the fact and circumstances. In the instant case there is no com-
plaint of any procedural unfairness, no malafides as such are attributed to
any of the officers of the Board and so it is not possible to hold order
passed by the Board directing the closure of the industries is shockingly
disproportionate and excessively severe.

Thus, the critical analysis of the above said cases proves that the approach adopted by the Indian judiciary is highly appreciable in protecting the environment and controlling the water pollution.

7. REVIEW

From what has been discussed earlier in this chapter, it becomes obvious that the situation of water pollution is taking a serious turn in our country. The reasons for this as explained earlier are many. The root cause, in my opinion, is the explosion of population whereby we are adding the continued growth of the population at over 2 per cent per annum in a situation when some 40 per cent of our 950 million people are already below the line of absolute poverty, makes it practically impossible to cope effectively with environmental problems, even if the desire to do so was there. Secondly, our planning is also defective. Thus the result is that the growth of resources is not keeping pace with the growth in population and the resources per capita are diminishing. As a consequence, there is an ever-increasing pressure on our water resources too.

To combat the growing menace of water pollution in our country, the Union Government had promulgated the Water (Prevention and Control) Act in 1974 as discussed above to preserve the wholesomeness of water. In addition, Environment Protection Act was passed in 1986 and prior to that pollution Control Boards were established both at the Union and State levels. The State Boards have powers of instituting prosecution against all persons and organisations/agencies including local bodies and the heads of the departments of the government. But, most of these Boards are found to be extremely weak due to inadequate funds and lack of sufficient and well-qualified personnel. The latest example is the Ganga Action Plan (GAP) which became operational in September 1983. A 200-crore ambitious Ganga Purifying Project's progress report has been pathetic.[107]

The biggest culprit in realising the desired results of control of water pollution is the industrialist — State combine which has frequently succeeded in twisting the rule book. It is proved in the latest report of the Central Ganga Authority which clearly pointed out that even to day 27 major industrial units, out of which 13 were the Central Government Undertakings, had not paid adequate attention to the Pollution Control Boards directives.

Similarly, there are numerous other examples where both the government undertakings and private units have been willfully flouting water pollution control laws. For example, take the case of Delhi, Effluent Treatment Plants (ETPs) have been installed or are under installation for only 16 out of the total 63 polluting units. A large number of units have been evading ETPs considering them unnecessary expenditure. The Indraprastha Thermal Power Station, one of the largest pollutants in the capital, has been dillydallying in installing the required equipment because it would have spend between ten to twelve crore of rupees. Nearly 2,000 such industrial units will still have to fall in line.

In some cases, even after the culprit have been caught, they have installed pollution control equipment just to satisfy requirement of pollution control laws. But, maintenance of equipment had been totally neglected in a large number of units. Recently, there has been 13 cases where the ETPs have remained shut for more than six months because of equipment failure caused by neglect of maintenance. On the other hand, a few State Boards themselves have become a den of corruption where industrialists could easily by certificates from clerks and typists.[108]

Added to this has been a peculiar nature of Water Pollution Control Act, that is, it prevents non-government agencies and affected citizens from taking legal action. Then, the technicalities of the courts have their own problems and there is no separate Environment Court[109] dealing exclusively with specific pollution cases.

Thus under these circumstances, it becomes most necessary that the water pollution control laws be made more stringent and adequate provision for funds and trained personnel to the agencies enthrusted with the task be added. A proper Centre-State coordination and the necessary will on the part of official agencies to make the laws click should also be ensured. Equally important is the establishment of a National Environment Protection Authority[110] which should also be made a department of Ministry of Environment but have sufficient authority, setting up of Environment court to tackle pollution cases, more media involvement and dissemination of information through documentation centres.

Above all, it is necessary to make the best out of the existing conditions by generating social consciousness about environment by forming social action groups and the importance of people's contribution in fighting the increasing menace of water pollution in our country.

The role of judiciary in controlling water pollution and conservation can be acknowledged very well in the leading cases which are clear indications to this fact. These cases are: Pondicherry Paper Limited,[111] Aggarwal Textiles,[112] Ratlam Municipality,[113] Tata Tea,[114] Delhi Bottling,[115] Gwalior Rayon Company,[116] Dehradun Quarrying case,[117] Ganga Pollution (Tanneries),[118] Ganga Pollution (Municipalities),[119] A.P. Rayon[120] and Modi Industries Cases.[121] The judicial activism has proved to be useful in these cases in controlling pollution of water and improvement of the environment.

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19. See also S.N. Jain, "The Water Pollution Act, 1974: The Basic Legal Issues", in Paras Diwan (ed.), Environment Protection, 1987, p. 179.

19a. Various provisions of the Act were suitably amended by the Water (Prevention and Control of Pollution) Amendment Act, 1978. Further, the exorbitant fine was imposed under the 1988 amendment to Water Act, 1974.

19b. The raising the temperature of water by the discharge of untreated sewage or trade waste, rendering a stream unsuitable for the purpose of another riparian owner such as cattle drinking, polluting a water supply or fouling a river so as to kill or injure the fish in it are given as instances of pollution.

20. But, John R. Holum defined water pollution as "the addition to water of an excess of material (or heat) that is harmful to humans, animals, or desirable acquatic life, or otherwise causes significant departures from the normal activities of various living communities in or near bodies of water". See John R. Holum, Topics and Terms in Environmental Problems, New York, 1977, p. 655.

21. See Sec. 2(j).

22. See Sec. 2(I) of the Act.

23. The Merchant Shipping Act, 1958 deals with marine pollution and was enacted on pursuant to an international Convention of 1954.

23a. See M.C. Mehta v. Union of India, AIR 1988 SC 1037; T. Damodar Rao v. The Special Officer, Municipal Corporation, Hyderabad, AIR 1987 AP 171; M.C. Mehta v. Union of India, AIR 1987 SC 1086; Mahabir Soap and Godakh Soap Factory v. Union of India, AIR 1995 Ori. 219.

24. In a number of cases, the baord took recourse to Section 33 and obtained court's direction to industry. For instance, this happened in cases of Delhi Cloth Mill, Delhi and Pondicherry Paper Mills, Pondicherry, see *Times of India*, Delhi, December 26, 1982.

25. See ISI, Indian Standard: Tolerance Limits for Industrial Effluents (1982).

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27. See ISI, Indian Standard: Tolerance Limits for Inland Surface Water Subject to Pollution (1982).

28. Supra note 19 at 4.

29. *Ibid.*, at 5.

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32. *Ibid.*, at 6.
33. *Ibid.*, at 4. (Emphasis added).
34. See S.N. Jain, supra note 19 at 190.
35. According to the baord's own admission, City sewages are the major sources of water pollution. About 90 to 94 per cent of total wastes are domestic sewage flowing primarily from major cities and towns, see Annual Report (1979-80), p. 10.
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37. But, in U.S.A., in U.S.V. Standard Oil Co., (1966) 384 U.S. 224, the Supreme Court sustained a conviction for accidently discharging valuable aviation fuel into St. John's River.
38. Under the U.S. Water Pollution Control Act, 1974, even for the first offenders in certain violations a maximum penalty of 25,000 dollars per day of violation and one year's imprisonment is provided.
39. Schedule II (See Section 3)

Purpose for which water is consumed	*Maximum rate*
1. Industrial cooling spraying in mine pits or boiler feed.	Three-fourths of a paisa, per kilo litre.
2. Domestic purpose	One paisa, per kilo litre.
3. Processing whereby water gets polluted and the pollutants are easily bio-degradable.	Two paise, per kilo litre.
4. Processing whereby water gets polluted and the pollutants are not easily bio-degradable and are toxic.	Two and a half paise per kilo litre.

40. Schedule I (See Section 2 (*c*).
    1. Ferrous metallurgical industry
    2. Non-ferrous metallurgical industry
    3. Mining Industry
    4. Ore processing industry
    5. Petroleum Industry
    6. Petro-chemical industry
    7. Chemical industry
    8. Ceramic industry
    9. Cement industry
    10. Textile industry
    11. Paper industry
    12. Fertilizer industry.
    13. Coal (including coke) industry.
    14. Power (thermal and diesel) generation industry.
    15. Processing of animal or vegetable products industry.
41. AIR 1980 SC 1622.
42. *Ibid.*, p. 1629.
43. Jariwala, C.M.: A Journey from Ratlam Municipality to M.C. Mehta, Environmental Law Policy and Prospectives. 1995, Ed. Naghbooshnam, Centre for Research on New International Economic Order, Madras, pp. 45-46.

CHAPTER FOUR

Control of Air Pollution : Law and Practice

1. IMPORTANCE OF PURE AIR

The atmospheric environment of man is both narrow and finite.[1] It contains about 20 per cent oxygen which animals, including man, require for life and, because the average person, requires available oxygen at pressures approximating 3 pounds per square inch, man can not survive for long if oxygen is not available in close to that proportion and at that pressure. Other constituents of air include variable amounts of water vapour, nitrogen (78 per cent), carbondioxide, carbon monoxide and certain other gases, all of which, total less than one per cent by weight. The proportions of the gases are about the same in all parts of the world. The water vapour amounts to 1 to 3 per cent by volume throughout the world's atmosphere. For our considerations, the water vapour can be regarded as an independent gas mixed with air.

There are several atmospheric layers. The troposphere is layer adjacent to the earth and varies in height from about 28,000 feet over the poles to 55,000 feet over the equator, the depths being subject to seasonal change. Normally, troposphere temperature decreases with increasing altitude and we term this phenomenon the lapse rate. Where an abrupt change in the rate of temperature fall with altitude increase occurs, we reach a region called the tropopause. This atmospheric region separates the troposphere (from 26 to 29 miles thick). Our discussion here will principally be concerned with the effects of man's activity on the troposphere and, to some degree, the stratosphere. Air pollution is perhaps the most common form of environmental degradation in the big cities of both developed and developing countries. Air constitutes 80 per cent of the total daily intake by weight and a person breathes 22,000 times a day inhaling 16 kg. of air. Thus is reveals that air is very important for human survival as well as for other organisms.

2. MEANING OF AIR POLLUTION

Among the usual wastes released into the air are lead and carbon dioxide, sulphur dioxide, carbon monoxide, nitrogen oxide and suspended particulates like dust.[2] According to Section 2 of the Air (Prevention and Control of Pollution) Act, 1981, "air pollutant" means the presence in the atmosphere of any "air pollutant" which in turn means any of these pollutants present in solid, liquid or gaseous form in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or environment.

Air pollution is as old as industrialisation. The air pollution may be classified into two types:

(*i*) *Air pollution* when air contains solid and liquid particles such as dust carbon, hydrocarbons, etc., which are electrically charged and thus kept in suspension by electrostatic forces.

(*ii*) *Air pollution* when the air contains gases which are poisonous or obnoxious in nature such as sulphur dioxide, carbon monoxide, oxides of nitrogen, hydrocarbon vapour and other substances. The most harmful element is benzopyrene.

The first type of air pollution is caused by domestic and mobile sources. Second type of air pollution is created due to industries.

Thus, air pollution means the presence in atmosphere of one or more contaminates such as dust, fumes, gas, mist, odour, smoke or vapour in quantities, of characteristics, and of duration such as to be harmful to human, plant, animal and even property.

3. MIXING OF POLLUTANTS WITH THE AIR

The atmosphere is like a gigantic reaction-vessel in which countless and largely unidentified chemical reactions take place. It is a reaction-vessel whose properties change as temperatures and pressures change, a truly dynamic state. Likewise "pure" air, in addition to the oxygen, nitrogen, water vapour and oxides of carbon as mentioned earlier, also includes minute amount of sulphur.

The oxygen-carbon dioxide cycle is of fundamental importance to animal-plant relationships. Atmospheric oxygen is produced by photosynthesis, a process by which plants exploit solar energy and trap carbon dioxide to synthesize organic (carbon-containing material) matter; a by-product of this process is oxygen. Photosynthesis has been taking place for millions of years, and must continue in order to maintain the oxygen content of the atmosphere. While plants thus get their energy for growth and reproduction from the sun, animals extract energy from chemical packets (plants or other animals). In essence, animals burn material in the presence of oxygen is oxides of fuel materials, for example, carbon catalysts called enzymes and coenzymes. The result of this combustion in the presence of oxygen is oxides of fuel materials, such as carbon dioxide. When man burns other materials in manipulation of his environment, other oxidized forms are generated, such as oxides of sulfur and nitrogen, etc. Serious forms of air pollution have also arisen in India due to emission of smoke, sulphur dioxide, nitrogen oxides, carbon monoxides and dust-fall.[3]

A. Carbon Monoxide As Pollutant

The complete combustion (oxidation) of carbon in the presence of oxygen results in the development of carbon dioxide (CO_2). Carbon monoxide (CO) results from incomplete combustion and is an almost exclusively man-made, pollutant. Its chemical fate in the atmosphere is not certain, although it may include conversion to CO_2, reaction with certain reactive chemicals (hydroxyl radicals) or assimilation by plant life on land or ocean absorption and biological oxidation. It is toxic to humans at concentrations of 100 parts per million with exposure for several hours. Carbon monoxide is produced almost entirely from incomplete combustion of fuel and predominantly by automobile engines, but tiny amounts are normally produced by man and other animals. Excessive carbon monoxide emanating from factories, for example, can have harmful effects ranging from drowsiness to coma, respiratory failure and death.

B. Carbon Dioxide As Pollutant

Carbon dioxide (CO_2), on the other hand, occurs naturally as a by-product of animal respiration. However, a major contribution results from the combustion of fossil fuels such as coal, oil and gas. Since the advent of the industrial revolution, man has increased CO_2 emissions, principally by electric power plant and internal combustion engines. It has been estimated[4] that man-made emissions of CO_2 will show an eighteen-fold increase from 1890 to 2000. Because of pollution from these major sources, carbon dioxide enters the air faster than the natural cycle of carbon dioxide can adjust to the accelerated input. Besides assimilation of carbon dioxide by both aquatic and terrestrial plants, the oceans provide a huge sink for CO_2 with exchanges taking place at air-water interfaces and shallow and deep water mixing. Limestone (calcium carbonate) is formed by hydration of CO_2 and reaction with calcium ion. However, the movement of CO_2 from shallow to deeper parts of the ocean occurs slowly and thus is one of the rate-limiting parts of the cycle of release into air, diffusion into water, etc. This is one reason for the slow but measurable buildup of carbon dioxide in the atmosphere.

Carbon dioxide has an effect on global temperature because of its ability to absorb heat energy (infrared radiation) and reflect energy back to earth much as the glass on a green-house does, allowing less heat to escape to outer space. Since short wavelength energy (ultraviolet) passes through carbon dioxide, an increase in CO_2 concentration with a more or less constant supply of solar energy should result in increasing global temperatures. Many scientists attributed the rise in mean global temperature in the 60 years period after 1880 to the seven percent increase in atmospheric carbon dioxide concentration. A decrease in mean global temperature has been noted since 1940, and may be due to increases in water vapour and atmospheric turbidity from air pollution, resulting in less incoming energy reaching the earth, since they exert their own greenhouse effect in a reverse direction. Changes in solar activity could be another source of this decrease in temperature.

C. Other Weather-Changers And Air Pollution

Indeed, various elimatological changes are increasingly being attributed to air pollution. Dust particles (800 million tons produced worldwide per year) are effective cloud forming agents since their attraction for water vapor permits condensation and ice crystal formation on the dust nuclei. With sufficient moisture present, the droplets grow and fall, resulting in the increased precipitation potential, rainfall, and weather change already believed to have occurred in many locales. For example, one investigator noted an apparent increase in cloudiness along the heavily traveled jet aircraft corridors between New York and Chicago; a pound and one-quarter of water is released per gallon of jet fuel burned.[5] At altitudes of 20,000 to 40,000 feet the rarified atmosphere and cold temperatures permit large volumes of air to be saturated by relatively small quantities of water. In addition, particulate exhaust from the jets contributes to the "seeding potential", setting up good conditions for cloud formation. Thus, even a seemingly innocuous substance such as water vapor can, under certain conditions, invoke profound environmental change.

D. Nitrogen Oxides As Pollutants

Oxidation of nitrogen and release of nitrogen oxides into the atmosphere comes largely from automobile and electric power plant sources. Man-made sources do not account for all or even the largest part of global nitrogen emission; other sources include biological processes and lightning. Yet another source is the possible contribution of the application of nitrate-containing fertilizer.

Some of the oxides of nitrogen are oxidized further to nitrogen dioxide which strongly absorbs ultraviolet light from the sun, creating nitric oxide and atomic oxygen (O); the later can form ozone (O_3) in the presence of molecular oxygen (O_2). This highly reactive form of oxygen has been responsible for ozone "alerts" in Los Angeles. During an ozone alert, out-of-doors exercise by school children is restricted in order to avoid lung damage. These ingredients in the presence of hydrocarbons (compounds containing carbon and hydrogen) react to form an eye-irritating, mucous- membrane damaging substance called peroxyacyl nitrate, or PAN, a principal component of photochemical smog. Other sources of hydrocarbons are natural bacterial decomposition of organic matter and release from forests, so that photochemical smog, while common in most of our major cities, has the potential of forming even in rural areas given the presence of nitrogen oxides and sunlight.

E. Particulates As Pollutants

Particulate matter is enormously widespread. In Calcutta City, dust fall levels as high as 30 tons per square mile per month were recorded in 1989. Dust fall tends to consist of relatively heavy particles which settle close to their source. Finer particles settle at greater distances. Particles larger than 10 microns emanate from grinding, spraying, and erosion. Particles less than 5 microns in size may reach the lower respiratory passages and lodge in the tiny air sacs which terminate them. Here there are none of the defenses which tend to expel the larger particles from the upper respiratory passages. Sulfur dioxide may be absorbed on those particles, and slowly released into the air sacs. Other harmful components such as radioactive isotopes of polluted air can also be carried into the lungs on these tiny particles. Other aerosols, such as DDT, are blown from the forest, field or garden where they were originally sprayed and passed through food chains from plant to animal to man or even directly to man. In this way, DDT has contaminated animal (including human) fat tissue in virtually all areas on the globe including human) fat tissue in virtually all areas on the globe including the polar zones. Indeed, DDT has made its way into mothers' milk, resulting in the mother contributing to the contamination of her infant.

As indicated earlier, particles can scatter sunlight, reducing the amount of energy reaching earth and provoking global temperature decreases. Global dust levels are rising in the atmosphere and include products from all phases of human activity, including fossil fuel burning, and natural products such as volcanic eruptions and forest fires. Dustfall can also come from thermonuclear explosions which have radioactive isotopes as additional by-products.

F. Sulfur Oxides As Pollutants

Oxides of sulfur are emitted largely from man-made sources and are primarily released as sulfur dioxide, which may be oxidized to sulfur trioxide. The latter can combine with water vapor to form sulfuric acid mists which are highly corrosive to building materials, including stone and marble. Indeed, the oxides of sulfur can, in several decades, deteriorate statuary that has survived the ravages of several thousand years of normal weathering. When precipitated into water via rainfall sulfate salts increase acidity and can destroy aquatic life, most of which cannot survive at $p^{H'}$ s (an index of acidity) lower than 4.0. Salmon kills occur at p^H 5.5. While p^H of lakes and rivers vary with seasonal changes in temperature and biological activity, the threat from sulfur oxides is formidable. Natural sulfur oxide sources include volcanoes, geysers and decomposition of sulfur-containing organic material.

Other emissions deserving mention include lead emanating largely from gasoline burning but also from smelting and certain glazing operations. About 65 percent of the lead in combusted gasoline is released into the atmosphere and results in both local and distant fallout. It is estimated that the northern hemisphere contains a thousand-fold surplus of lead above and beyond natural base levels because of man's contributions.

Radioactive pollutants vary from short-lived isotopes, such as radioiodine with an 8-day half life to radiocarbon with a 5,000-year half life and many intermediates. These are entering the environment as a result of nuclear explosions.

Obviously, a variety of compounds are released into the atmosphere from all of man's activity with little regard for the how, when, or why of release. This anarchy of pollution results in the formation of many poorly understood or unidentified compounds, the short and long range biological effects of which are even less well understood. Take for example, the combustion of many plastic containers can result in the formation of totally new products reacting chemically in the atmosphere in ways completely foreign to us and producing effects which are as yet undetected or at least unknown. Polychlorinated biphenyls, used as plasticizers in the manufacture of many products, are chemically similar to DDT, and are also appearing in the environment.

4. EFFECTS OF AIR POLLUTION

In any metro-politan area, acute air pollution disasters can occur whenever atmospheric conditions prevent rapid dispersal or dilution of the pollutants. Acute air pollution disasters resulting collectively in the deaths of thousands in Belgium's Meuse Valley (1930), Donord, Pa (1948), London (1952, 1959, 1962), New York City (1953, 1962, 1966) have been well documented. All of these episodes had certain common characteristics:

(*i*) A high population density with a correspondingly high concentration of combustion processes.

(*ii*) Seasonal influence occurrence was in the winter when fuel consumption was increased and upper respiratory diseases were prevalent.

(*iii*) A stagnant air situation and temperature inversion for several days to a weak with accumulation of pollutants in the air.

Thus the air pollution has an adverse effects upon the health of human beings as well as ecology. It has been found that people living in air polluted areas are suffering from certain respiratory diseases[6] than people living in fresh air. This obviously establishes the "cause and effect" relationship between air pollution and diseases. The growth of plants in air polluted area is stunted because of reduced solar radiation. Acidity of rain water and the deposition of solids on leaves are other effects of air pollution.

5. SOURCES OF AIR POLLUTION

The sources of air pollution may be classified into following categories:

(*i*) *Domestic* : It includes domestic fire and domestic incineration which is required for cooking and heating purposes. At present it is perhaps a weak source of air pollution.

(*ii*) *Industry* : It is the principal source of air pollution and covers all the units which are engaged in production and consuming energy in any form. It includes oil, gas, coal, electricity and nuclear fission etc. Mainly the contribution of industries to air pollution is in the form of "dark smoke" which shows that combustion is incomplete, and indicates the presence of pollutants.

(*iii*) *Mobile* : This source causes air pollution specially in metropolitan areas and it is a second largest source for air pollution. Mobile source includes road vehicles, aircrafts, ships, railways and all other combustion engines. Today, with constantly increasing number of vehicles particularly in towns and big cities, the problem of air pollution is becoming more and more acute.

(*a*) *Lead in Petrol and Air Pollution* : Lead in petrol when used in high compression engines is emitted in air as lead oxides which are highly toxic and harmful. But, petrol with a high content of lead has become essential for high compression engines. Because, lead free petrol means a high consumption of petrol in high compression engines. Lead when mixed with petrol improves its antinock properties. Let us hope that good sense would prevail and the Government of India would prefer good health for citizens rather than petrol consumption. As Australia has introduced lead free petrol from July 1985.[6a]

6. LEGAL CONTROL OF AIR POLLUTION

The provisions of the following enactments are relevant to control air pollution:

A. The Boilers' Act, 1923.
B. The Factories Act, 1948.
C. The Industries (Development and Regulation) Act, 1951.
D. Mines and Minerals (Regulation and Development) Act, 1957.
E. Local Municipal Acts :
    (*a*) Calcutta Municipal Act, 1951.
    (*b*) Delhi Municipal Corporation Act, 1957.
    (*c*) Gujarat Municipalities Act, 1963.
    (*d*) Punjab Municipal Act, 1911.

A. *The Boilers' Act, 1923* : Matters covered under boiler regulations throughout India are dealt under the Boilers' Act, 1923. It deals with standards of construction, maximum pressure, registration and regular inspection of all boilers.[6b] The Act provides for the certified boiler attendants and Central Boilers Board.[6c] The Board is empowered to make regulations to lay down the standard conditions in "(*a*) respect of material design and construction which shall be required for the purpose of enabling the registration and certification of a boiler; (*b*) for prescribing the method of determining the maximum pressure at which a boiler may be used; (*c*) for regulating the registration of boilers, prescribing particulars to be produced by the owner, the method of preparing a boiler for examination, etc.; (*d*) for regulating the inspection and examination of boilers and steam-pipes, and prescribing forms of certificates therefor; (*e*) for ensuring the safety of persons working inside a boiler; and (*f*) for providing any other matter which is not, in the opinion of the Board, a matter of merely local or State importance".[7]

Similarly State Government has been empowered to make rules to regulate the transfer of boilers to provide for their registration and certification; to require boilers to be in charge of persons holding certificates of competence and to prescribe the conditions for grant of such certificates; to provide for any matter or merely local importance in the State.[8]

The enforcement machinery under the Boilers' Act is composed of Chief Inspector, Deputy Chief Inspectors and Inspectors appointed by the State Government, who are supposed to exercise their powers and perform their duties under the Act. Regarding the proper maintenance and safe working of boilers, advice can be offered by the Inspectors to the owners.[9] The use of uncertified boilers is prohibited,[10] and every boiler should be registered.[11] The owner of a boiler has to apply for registration to the Inspector with prescribed fee. The Inspector then proceeds to measure and examine the boiler to determine the maximum pressure, if any, at which such boiler may be used. The result of such examination is reported to the Chief Inspector, who may then register the boiler and assign a number thereto after satisfying himself that any structural alteration, addition or renewal which he may deem necessary has been made in or to the boiler or any steam-pipe attached to it.[12] Then the certificate is issued to the owner authorising the use of a boiler for a period not exceeding twelve months at a pressure not exceeding such maximum pressure as he thinks fit and as is in accordance with the regulations made under this Act.[13]

Use of a boiler by the owner without certificate or at a higher pressure than that allowed has been made punishable under Section 23 with fine which may extend to five hundred rupees and with additional fine in case of a continuing offence. The Act also applies to boilers and steam-pipes belonging to the Government.

B. *The Factories Act 1948* : The Factories Act, 1948 provides for approval, licensing and registration of factories; dangerous dusts and fumes; artificial humidification; control of explosive and inflammable dusts, etc. Chapter III of the Act relates to 'Health'. Section 14 in this

Chapter dealing with dust and fume provides as follows:

> "(1) In every factory in which, by reason of the manufacturing process carried on, there is given off any dust or fume or other impurity of such a nature and to such an extent as is likely to be injurious or offensive to the workers employed therein, or any dust in substantial quantities, effective measures shall be taken to prevent its inhalation and accumulation in any work-room, and if any exhaust appliance is necessary for this purpose, it shall be applied as near as possible to the point of origin of the dust, fume or other impurity, and such point shall be enclosed so far as possible.
>
> (2) In any factory no stationary internal combustion engine shall be operated unless the exhaust is conducted into the open air, and no other internal combustion engine shall be operated in any room unless effective measures have been taken to prevent such accumulation of fumes therefrom as are likely to be injurious to workers employed in the room."

In respect of all factories in which the humidity of the air is artificially increased, the State Government may under Section 15, make rules (*a*) prescribing standards of humidification; (*b*) regulating the methods used for artificially increasing the humidity of the air; (*c*) directing prescribed tests for determining the humidity of the air to be correctly carried out and recorded; and (*d*) prescribing methods to be adopted for securing adequate ventilation and cooling of the air in the work rooms.

In the Chapter dealing with 'Safety' Section 37 relates to explosive or inflammable dust. It reads:

> "(1) Where in any factory any manufacturing process produces dust, gas, fume or vapour of such character and to such extent as to be likely to explode an Ignition, all practicable measures shall be taken to prevent any such exposition by —
>
> (*a*) effective closure of the plant or machinery used in the process;
>
> (*b*) removal or prevention of the accumulation of such dust, gas, fume or vapour; and
>
> (*c*) exclusion or effective enclosure of all possible sources of ignition."

Under Section 37(4) 'no plant, tank or vessel which contains explosive or inflammable substance shall be subjected in any factory to any welding, brazing, soldering or cutting operation which involves the application of heat unless adequate measures have first been taken to remove such substance and any fumes arising therefrom or to render such substance and fumes non-explosive or non-inflammable and no such substance shall be allowed to enter such plant, tank or vessel after any such operation until the metal has cooled sufficiently to prevent any risk of igniting the substance.

In case of contravention of any of these provisions the occupier and manager of the factory shall each be guilty of an offence punishable with imprisonment or/and fine[14] and with enhanced penalty after previous conviction.[15] Section 105 provides that no court shall take cognizance of any offence except on complaint made by or with the previous sanction in writing of an Inspector. The complaint is to be made within three months of the date on which the alleged commission of the offence came to the knowledge of an Inspector.[16] It is difficult to read this Section so as to make the date on which the Inspector would or ought to have acquired the knowledge of the commission of the offence — where the statute does not provide for an enquiry into the accident. Moreover, the right of complaint is given only to the Inspector and not to the individual citizen.

C. *The Industries (Development and Regulation) Act, 1951.* This Act provides for the development and regulation of certain industries through licensing. This Act confers on the Central Government power to make rules for regulating the production and development of the industries mentioned in the Schedule and for consultation with Provincial Government on these matters. Provision has also been made for the constitution of a Central Advisory Council, prior consultation with which is obligatory before the Central Government takes certain measures such as the revocation of a licence or taking over the control and management of any industrial concern.[17] It is important to note that under the Act the burden of proof lies on the polluter and not on the prosecution as is made clear in Section 28 which states:

> "Where any person prosecuted for contravening any order made under Section 18-G which prohibits him from doing an act without a permit .... the burden of proving that he has such authority, permit ..... shall be on him."

As discussed earlier, the industries are the chief polluters of environment. But the Industries Act as such makes no direct or indirect reference to environment. Under the Act the planning of future development on sound and balanced lines is sought to be achieved by the licensing of all new undertakings by the Central Government. The imposing conditions for issue of licences also can be stretched to serve the cause of environment.[18]

D. *The Mine and Minerals:* (Regulationand Development) Act, 1957. Protection against environmental degradation due to mining is to some extent regulated by the Mines and Minerals (Regulation and Development) Act, 1957. Its purpose is to regulate mines and development of minerals. Under Section 4 of this Act, no person can undertake any prospecting or mining operations in any area, except under and in accordance with the terms and conditions of a prospecting licence or a mining lease granted to him under the Act and the rules made thereunder. The conditions for obtaining a prospecting licence or a mining lease are also specified.[19] The applicant is entitled for the grant of certificate of approval as a matter of right, the only condition being that he should be a citizen of India and should deposit the prescribed fee. The Act does not provide for refusing or cancelling the certificate of approval. Prospecting licences and mining leases are void and of no effect if granted, renewed or acquired in contravention of the provisions of the Act or any rules or orders made thereunder.[20] Penalty provided is imprisonment as well as fine.[21] Further no court can take cognizance of any offence punishable under this Act except upon complaint in writing made by a person authorised in this behalf by the Central or the State Government.[22]

The provisions are made for the regulation of industries and mines. The Act is silent to the problems of environmental pollution, but under the Rules, powers of the Government are utilised to restore the abandoned mines and to prevent pollution.

E. *Local Municipal Acts* : In a slightly different form, some of the provisions in Air Pollution Control legislation already exist in the various municipal enactments for prevention or suppression of nuisances. These provisions are aimed at combating pollution at the local level. Some of these enactments give sufficient powers to the municipal bodies to prevent pollution of air by certain industries.

Section 436 of the Calcutta Municipal Act, 1951, empowers the Commissioner to refuse to give permission if he is of opinion that the establishment of such factory, etc., would be objectionable by reason of the density of the population in the neighbourhood or would be a nuisance to the inhabitants. Again section 437(I)(b) prohibits the use of any premises for a purpose which is in the opinion of the corporation dangerous to life, health or property or likely to create a nuisance.[23] Section 438(2) clothes the Commissioner with the power to stop the user of any premises causing a nuisance, if the owner or occupier thereof refuses to obey the order of the Commissioner to stop such nuisance. Section 439 empowers the corporation to declare by public notice a specified area inside which no person shall use any premises for a purpose which in the opinion of the Corporation is dangerous to health or likely to create a nuisance. Section 583 enables the corporation or any person who resides or owns property in Calcutta to complain to the magistrate the existence of a nuisance and seek remedial measures.

Delhi Municipal Corporation Act, 1957 deals with regulations of smoke in factories, workshop and trade premises.[24] Section 206 of the Gujarat Municipalities Act, 1963 is unique in the sense that it empowers the municipality to deal effectively with smoke nuisance which results in air pollution. This section empowers the municipality to direct by public notice that any furnace employed in any work or building for the purpose of any trade or manufacture, "to be constructed, supplemented or altered so as to consume or burn or reduce as far as may be practicable, the smoke arising from such furnace". This Section read with Section 221 gives sufficient powers to the municipality to prevent pollution of the air by certain industries. Section 221 deals with nuisance from certain trades and lists out certain trades which can be completely prohibited or can be required to make structural alterations if they commit any nuisance. It further empowers the magistrate to close down the premises on the application of the executive committee of the municipality.

The Punjab Municipal Act, 1911, under Section 121 allows certain trades to be licensed by the committee, for the purpose of regulating offensive and dangerous trade. But the Section and bye-laws framed thereunder are inadequate especially to meet the air pollution caused by such trade. Similar is the position under Haryana Municipal Act, 1973.

Thus, even prior to the Air Pollution Control Act of 1981, we find certain provisions having a bearing on the subject of control of air pollution in enactments like the Factories Act, Industries Act, Mines and Minerals Act and the Boilers' Act. However, these enactments were passed with the primary objective of regulating factories, industries, mines and boilers. The matter of air pollution have been given only secondary importance in these enactments. The general rule making powers of the Government are used to prevent and control pollution under these legislations.

Some of the provisions which are similar to the provisions provided in the Air Pollution Control Act already exist in the local Municipal Acts, in a slightly different form, of prevention or suppression of nuisance with the aim of combating pollution at the local level. Municipal bodies have been given enough powers to prevent and control of air pollution by some industries in the Calcutta Municipal Act, Delhi Municipal Corporation Act and Gujarat Municipalities Act, etc.

F. *The Air (Prevention and Control of Pollution) Act, 1981* : From the above mentioned enactments, it becomes obvious that the subject to control of air pollution has been given secondary importance in these enactments. Therefore, it was felt necessary to enact a comprehensive legislation with the primary objective to deal with air pollution. The such enactment is the Air (Prevention and Control of Pollution) Act of 1981 passed by the Parliament under Article 253 of the Indian Constitution. The Act implements the UN Declaration on the Human Environment, which was adopted in June 1972 by the Stockholm Conference, to which India is also a party. The Act deals exclusively with the preservation of air quality and control of air pollution.

The Air Pollution Control legislation envisages the setting up of Air Pollution Control Boards at the Centre as well as in the States with power to issue and revoke licences to polluting industries, enforce emission standards and to frame rules and regulations for the control of air pollution.[25] The Act envisages an integrated approach for tackling the environmental pollution problems by laying down that the Central Board and State Boards for the Prevention and Control of Water Pollution constituted under the Water (Prevention and Control of Pollution) Act, 1974 shall also perform the functions of the Central Board as well as the State Board for the Prevention and Control of Air Pollution.[26]

The legislation is directed primarily against polluting industries — called scheduled industries — such as textile, power plants, iron and steel, cement, engineering, chemical fertilizers, coal industries, mining etc. It covers all sources of air pollution such as industries, transport, railways, automobiles, diesel vehicles as well as domestic fuel with all necessary powers to the Boards for effective action.[27]

Moreover, certain heavily polluted regions may be declared as "air pollution control areas" by the State Government after consultation with the State Board. Where any further pollution by the use of any fuel would become a severe health hazard to the people. Similarly, the use of any appliance can be prohibited in the premises situated in such control area.[28] The burning of any material (other than fuel) like garbage and other waste products in such area which is likely to cause air pollution can be prohibited by the State Government.[29] It also prohibits the fouling up of the air by burning smoking fuels for domestic purposes.

The State Government in consultation with the State Board has powers to give instructions to the concerned authority in charge of registration of motor vehicles under the Motor Vehicles Act, 1989, for ensuring standards for emission from automobiles and such authority is bound to comply with such instructions.

No industrial plant shall be operated in an 'air pollution control area' by any person without the previous consent of the State Board.[30] The State Government may make such inquiry as it may deem fit in respect of the application for consent containing particulars of the industrial plant and others as may be prescribed.[31] Certain conditions as prescribed in Section 21(5) are to be complied with by every person to whom consent has been granted. They should not allow emission of air pollutants in excess of the standards laid down by the State Board.[32] Failure to comply with these conditions is punishable with imprisonment which may extend to three months or with fine which may extend to ten thousand rupees or with both and in case the failure continues, with an additional fine which may extend to one hundred rupees for every day during which such failure continues after the conviction of the first such failure.[33]

Whenever in any air pollution control area the emission of any air pollutant into the atmosphere in excess of the standards laid down by the State Board occurs or is apprehended to occur due to accident or other unforseen act or event, the person incharge of the premises from where such emission occurs or is apprehended to occur shall forth with intimate the fact of such occurrence to the State Board and to such authorities or agencies as may be prescribed.[34] On receipt of such information, whether through intimation or otherwise, the State Boards and authorities shall, as early as practicable, cause such remedial measures to be taken as are necessary to mitigate the emission of such air pollutants, at the expense of the person concerned.[35] Failure to intimate such occurrence of the emission of air pollutants is punishable with imprisonment for three months or with fine up to five thousand rupees or with both.[36] The Act also provides for entry and inspection by any person so empowered by a State Board.[37] If any person wilfully delays or obstructs any such person in the discharge of his duties, he shall be guilty of an offence under Section 24(3) punishable under Section 38 for which no penalty has been provided elsewhere in the Act.

In case of violation of any other provision of the Act, a penalty of fine up to five thousand rupees, and in case of continuing contravention, an additional fine of one hundred rupees for everyday after conviction for the first contravention has been provided.[38] In Section 43, the right of complaint has been given only to the Board or with the previous sanction in writing of, the Board. Also there is a bar of civil jurisdiction in respect of matters for which provision for appeals is provided in the Act.[39] Veryrightly, the State has been made to be bound by its own Statute as is made clear from Section 41 which states that where an offence is committed by any Government Department, the Head of the Department shall be liable to be proceeded against and punished accordingly.

7. JUDICIAL RESPONSE TO CONTROL OF AIR POLLUTION

In order to understand clearly the judicial response to the protection of environment from air pollution in India, the following cases of the Apex Court and the High Courts are discussed as follows:

M.C. Mehta v. *Union of India*[40] is one of the most popular and famous cases decided by the Supreme Court related to air pollution. On 4th and 5th December, 1985 oleum gas leaked from one of the units of Delhi Cloth Mills Ltd. called, Shriram Food and Fertilizer Industries located in thickly populated area of Delhi and allegedly affected large number of people and one advocate practising in the Tis Hazari Court died on account of inhalation of Oleum gas. The matter was brought before the Supreme Court through Public Interest Litigation and raised some seminal questions concerning the true scope and ambit of Arts. 21 and 32 and SS. 2(2) and 23 of Air (Prevention and Control of Pollution) Act, 1981.

P. N. Bhagwati, 'C. J.' who delivered the judgment observed:—

"It is undoubtedly true that chlorine gas is dangerous to the life and health of the community and if it escapes either from the storage tanks or from the filled cylinders or from any other point in the course of production, it is likely to affect the health and well-being of the workmen and the people living in the vicinity." Regarding quantity of chlorine available in air which may pose health problem he remarks "..... chlorine is a hazardous gas and though smaller concentrations of chlorine in the air may cause only irritation and coughing larger concentrations, whether above 25 parts per million (PPM) or above 40 parts per million are likely to cause serious danger to life.... There can be no doubt that there would hazard to the life and health of the community, if there is escape of chlorine gas from the caustic chlorine plant".[41]

But in order to balance the development and the fundamental right enshrined in Art. 21 of the constitution, the court said:—

"We cannot ignore the interest of the workmen while deciding this delicate and complex question. It could not be disputed.... that the effect of permanently closing down the caustic chlorine plant would be to throw about 4,000 workmen out of the employment and that such closure would lead to their utter impoverishment".[42]

The court found that unit complying all the provisions contained in Section 2(*b*) 19(1), 21 and 23(*b*) of Air Act, allowed the industry to function.

In order to protect and improve the environment the court recognized the importance of zoning of industries and stressed for it green belt in the following words—

> ".... industries .... are essential for economic development and advancement of well being of the people... we can only hope to reduce the element of hazard or risk to community by taking all necessary steps for locating such industries in manner which would pose least risk or danger to the community and maximising safety requirements in such industries,"[43] and impressed upon the Government of India to evolve a national policy for location of chemical and other hazardous industries in areas where population is scarce and there is little hazard or risk to the community, and when hazardous industries are located in such area ..... every care must be taken to see that large human habitation does not grow around them. There should preferably be a green belt of 1 to 5 km. width around such hazardous industries."[44]

In order to reduce the burden of the court from litigations relating to environment coming in large number, the court put forward suggestions to the Central Government to set up Environmental Courts on the regional basis and to appoint at least one judge of having professional knowledge and two experts drawn from Ecological Sciences Research Group to adjudicate the matters pertaining to environmental pollution and ecological destruction. Although, the court allowed an appeal from these court to the apex court.[45]

But, certainly, Bhagwati J., mistakenly tendered suggestion to have two experts from Ecological Science Research Group because it is not necessary that an expert who deals with one field may have profound knowledge of the matters pertaining to different field. Further, academics count the ecology as branch of science but on the other hand, the sociologists, too, deals with social interaction of human being in the society. Now question remains whether a Sociologist or Geographer will come under this category.

Obviously, there should be separate training centres and institutes, and separate full fledged course should be conducted not by the universities but from the primary level of education to make the coming generations aware and to make capable to adjudicate the environmental problems.

M.C. Mehta v. *Union of India*[46] was decided much after the decision of above mentioned case in 1992 and the division bench of Rang Nath Mishra, C.J., G.N. Ray and A.S. Anand JJ. of the same court stressed on the need to show films and documentary for short duration on the television and in cinema halls and, that the All India Radio may assist this process of education, and direction was issued to the Central Government and the State Government to ensure compliance of the conditions laid down by the court.

"Law is a regulator of human conduct but no law can indeed effectively work unless there is an element of acceptance by the people in society. No law works out smoothly unless the interaction is voluntary. In order that human conduct may be in accordance with the prescription of law it is necessary that there should be appropriate awareness about what the law requires and there is an element of acceptance that the requirement of law is grounded upon a philosophy which should be followed. This would be possible only when steps are taken in an adequate measure to make people aware of the indispensable necessity of their conduct being oriented in accordance with the requirements of law.[47]

"In a democratic polity dissemination of information is the foundation of the system. Keeping the citizens informed is an obligation of the Government. It is equally the responsibility of society to adequately educate every component of it so that the social level is kept up. Supreme Court, therefore, accepted on principle the prayers made by the petitioner, for issuing appropriate directions to cinema exhibition halls to exhibit slides containing information and messages on environment free of cost; direction for spread of information relating to environment in national and regional languages and for broadcast thereof on the All India Radio and exposure thereof on the television in regular and short term programmes with a view to educating the people of India about their social obligation in the matter of the upkeep of the environment in proper shape and making them alive to their obligation not to act as polluting agencies or factors; and to make environment as a compulsory subjects in schools and colleges in a graded system to that there would be a general growth of awareness and issued certain directions to the Govt. to that effect".[48]

Again, with great honour to the court, the court has slipped from taking into account that most of the India's population reside in the villages and rural areas and to some extent in jungles donot have modern means of information and are hand to mouth. A large chunk of population are below poverty line. In recent time the proportions of population living below poverty line have increased. Hence, without educating people, new generation and future generation, from primary level and without introducing syllabus from school standard, it seems difficult to achieve the ambitious goal and its success, to make people aware sufficiently.

Chaitanya Pulvarising Industry v. *Karnataka State Pollution Control Board*[49] case is of peculiar nature where the court held that remedy against non compliance of condition laid down by the Board is to close down the industry.

After coming to the Air Act 1981, some areas were declared to the Air Pollution Control area where petitioner's industry was situated. The industry failed to obtain the consent of the Board under Rule 19 of the Act and the Board ordered for closure of the industry.

"The Act is designed to prevent, control and abatement of air-pollution, the provisions relate to preservation of quality of air and control of pollution. Keeping in view these objects the Act has provided for measures, which are preventive in nature, in the cases of industries to be established, and in the case of industries already established, they are remedial. In the case of industries established, it insists on obtaining consent of Board, making the industry amenable to the administrative control of the Board. Once a consent is given, the Board can issue order, directions, etc. which are to be complied with by the industry.... Non compliance of these conditions is made punishable under section 37 .... the direction to close down the factory solely because it has not obtained consent of the Board is clearly illegal... the petitioner has failed to comply with its order, it may take action under section 37 .... but that would not justify the passing of a prohibitory order which apart from causing loss to the owner has a serious consequence paralysing the industry affecting the livelihood of employed persons, the consequence may be more hazardous than the air pollution. Therefore, the "remedial measure" contemplated must be understood as such measure which mitigate the emission of air pollutants. Therefore, the harsh step of prohibiting the working of the Factory is neither warranted nor has it the legal sanctity.[50]

In *Mathew Lukose* v. *Kerala State Pollution Board*[51] a petition was filed in the Kerala High Court against pollution caused by a Chemical Company. This progressive judgment reaffirmed that Article 21 of the constitution includes right to clean air, water and a wholesome environment. Justice Sankaran Nair displays his grasp and undertaking of environment issues as he discusses the intensity of pollution problem in comparison with international tolerable limits.

Recalling the effects of air pollution, Sankaran Nair J. observed:—

"The importance of environment and proper environmental management policy cannot be under-rated. Awareness of this, when necessary, must be enforced by sanctions. Environmental deficit and degradation cause disastrous consequences like global warming, green house effect and depletion of ozone layer .... cloud formation due to air pollution can also trap sunlight and heat of the earth. Photochemical smogs with lethal consequences due to air pollution are well known. Ozone depletion has caused deleterious effect.[52]

In *Animal Feeds Diaries and Chemical Limited* v. *Orissa State (Prevention and Control of Pollution) Board*[53] following questions were before the court whether —

(*i*) Member Secretary of the Board is authorized to issue directions under section 31 of the Air Act.

(*ii*) The area where petitioner's factory was situated had been declared to be an air control area.

(*iii*) On the emission of foul odour from the petitioner's factory, Board could issued direction to close down the factory.

On making evaluation of the section 31-A of the Air Act, which gives power to the Board to delegate its power and function to any officer or authority who shall comply the direction, the court held that in want or evidence of directions of the Board being delegated to officers/authorities, the direction issued by the member secretary to close down factory was not valid.

But regarding third question the court held after examining the report that —

"There is possibility of preparation of poultry feed and foul odour was coming from the room where dry fishes have been stored... under section 19 of the Act, after an area is declared by the State Government to be air pollution control area, the State Government can prohibit the use of such fuel which will have effect of air pollution..... Air pollutant has been defined in Section 2(*b*) to mean any solid, liquid or gaseous substance present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plant or property or environment. Air pollution as defined in Sec. 2(*b*) to mean the presence in the atmosphere any air pollutant ..... The Act is designed to prevent control and abatement of air pollution. The provisions under this Act relate to preservation of quality of air and control of air pollution, keeping these objects, in view the Act has provided for measures which are preventive in nature in the case of industries to be established and the cases of industries already established. The measures are remedial and that is why in case of an established industry consent of the Board is insisted upon. The Board can issue such direction within the ambit of sec. 31-A only on being satisfied that industry in question emits, "air pollutant" by which there has been an air pollution. Possibility of emission of foul odour or emission of foul odour itself without a finding that there has been emission of air pollutant would not clothe the jurisdiction with the Board to issue any direction," and in the absence of any finding that petitioner's factory emits any air pollutant as defined in section 2(*a*) of the Act it was not within the jurisdiction of the Board to issue the direction to shift or close down the industry in exercise of power under section 31-A of the Act.[54]

In *Indian Council for Enviro-Legal Action* v. *Union of India*[55] a division bench comprising of Mr. Justice B.P. Jeevan Reddy and Mr. Justice B.N. Kirpal in their 83-page judgment on a public interest petition characterized the five chemical industries located in Cichhri Village of Udaipur District of Rajasthan as "rogue industries" as they had continuously, persistently and insolently violated the law, attempted conceal poisonous sludge, discharged highly toxic effluents — and failed to implement order of the apex court over several years.

"Since the chemical industries are the main culprits in the matter of polluting the environment, there is every need for scrutinizing their establishment and functioning more rigorously. No distinction should be made in this behalf as between the large-scale industries and a small-scale industry or for that matter between a large-scale industry and a medium-scale industry. All chemical industries, whether big or small, should be allowed to be established only after taking into considerations all the environmental aspects and their functioning should be monitored closely to ensure that they do not pollute the environment around them even the existing chemical industries may be subjected to such a study and if it is found on such scrutiny that it is necessary to take any steps in the interests of environment, appropriate directions in that behalf may be issued under Ss. 3 and 5 of the Environment Act.[56]

"They have inflicted untold misery upon the poor, unsuspecting villagers, despoiling their land, their water sources and their entire environment — all in pursuance of their private profit. They have forfeited all claims for consideration by this court[57] and the court ordered for closure of all the plants and factories located in Bichhri village.

The court issued direction to the Central Government and Rajasthan Pollution Control Board to perform their duty and observed as under:—

"..... failure to carry out their statutory duties is seriously undermining the right to life.... guaranteed by Article — 21 of the constitution .... if any industry is established without obtaining the requisite permission and clearance and if industry is continued to be run in blatant disregard of law to the detriment of life and liberty of the citizen living in the vicinity, can it be suggested with any modicum of reasonableness that this court has no power to intervenes and protect the fundamental right to life and liberty of citizens of this country, the answers in our opinion, is itself evident".[58]

Referring to suggestion for establishment of environmental courts, the judges said the:—

"The suggestion of establishment of environment court is a commendable one. The experience shows that the prosecution launched in ordinary criminal courts under the provisions of the Water Act, Air Act and Environment Act never reach this conclusion either because of the work load in those courts or because there is no proper appreciation of the significance of the environment matter on the part of those in charge of conducting those cases. These court should manned by legally trained persons/judicial officers and should be allowed to adopt summary procedure."[59]

The court accepted the "Polluter pays" Principle promoted by the Organization on Economic Co-operation and Development (OECD) during the 1970s, when there was great public interest in environmental issues. Justice B. P. Jeevan Reddy has observed:—

> "The polluter pays principle demands that the financial costs of preventing or remedying damage caused by pollution, should lie with the undertakings which cause the pollution, or produce the goods which cause the pollution. Under the Principle it is not the role of the Government to meet the cost involved in either prevention of such damage, or in carrying out remedial action, because effect of this should be to shift the financial burden of the pollution incident to the tax payer."[60]

According to this principle, responsibility for repairing the damage is that of the offending industry Sections 3 and 5 empowers the Central

Government to give directions and take measures for giving effect to this principle, but with a great respect to the learned judges the theory is not sufficiently coped up to meet the mounting problem of environmental pollution and ecological degradation. And industry being juristic person bears no mind, brain and faculties of his own. It functions through the Board of Directors and in reality. Board of Directors is mind of the industry. So, those who are living or natural persons and commits offence/offences relating to environment and do not obey the court order or follow the direction of the Board or the Government, they should actually be punished and penalised but not industries should be closed down or their functioning should not be paralised. The court by issuing the direction for closure of the industry scraps the opportunity of employment of the workmen and such closure lead to their utter improverishment. It is nothing else than the effort on part of the court to take away or curtail the rights given to the citizen. The court is playing with "give and take".

Regarding the liability of the industries which carry on hazardous activity, P.N. Bhawati, C.J. in *M.C. Mehta* v. *Union of India*[61] which is popularly known as *Oleum Gas Leak Case* has observed as under:—

> "An enterprise which is engaged in a hazardous or inherently dangerous industry which poses a potential threat to the health and safety of the person working in the factory and residing in the surround areas owes an absolute and non-delegable duty to the community to ensure that no harm results to anyone on account of hazardous or inherently dangerous nature of the activity which it has undertaken. The enterprise must be held to be under an obligation to provide that hazardous or inherently dangerous activity in which it is engaged must be conducted with the highest standards of safety and if any harm results on account of such activity, the enterprise must be absolutely liable to compensate for such harm and it should be no answer to the enterprise to say that it had taken all the reasonable care and that the harm occurred without any negligence on its part."[62]

The difference between *Oleum Gas Leak Case*[63] and *Indian Council for Enviro-Legal Action* V. *Union of India*[64] is that in Oleum Gas Leak Case industry was established or being operated contrary to law as in Indian Council For Enviro-Legal Action Case. In the first was not alone the case where the order of lawful authorities and courts were violated with impunity as in latter. In latter, there is clear violation of law and disobedience to the order of the Supreme Court apart from the orders of the lawful authorities. The Supreme Court has to ensure the observance of law and of its orders as a part of enforcement of fundamental rights. That power cannot be disputed.

Blackburn J. (court of Exchequer Chamber) stated the rule of absolute liability in *Fletcher* v. *Rylands*[65] which was applied in the Oleum Gas Leak case. The rule was stated in the following words:—

> "The rule of law is, that the person who, for his own purposes brings on his land and collects and keeps anything likely to do mischief if it escapes, must keep it in at his peril, and if he does not do so, is prima facie answerable for all the damage which is the natural consequence of its escape. He can excuse himself by showing that the escape was owing to the plaintiff's default or perhaps the act was consequence of vis major, or the act of God."[66]

"The rule laid down in above stated case was further added a rider viz. that the user by the defendant should be a "non natural user" to attract the rule. In other words, if the user by the defendant is a natural user of land, he would not be liable for damages." This rule has been approved by the House of Lords in the recent decision in *Cambridge Water Company* v. *Eastern Counties Leather*.[67]

In *Dwarika Prasad* v. *Dr. B.K. Roy Choudhury*[68] it was held the noise created by the working of a refrigerator affected only a few people in the nearly building and the public at large were not adversely affected. So the air pollution caused due to noise remained no attraction for the court mainly because the matter relating to pollution was not serious problem during those days.

In *Rabin Mukherjee* v. *State of West Bengal*[69] the petitioner filed a writ petition against State authorities for their failure to take action against user of electric air horn which produced a shrill discomforting sound that disturbed the public and was found to have an adverse effect on physical and mental health.

Bhagwati Prasad Banerjee J. has observed as under:—

"It is a matter of a common knowledge that transport vehicles even for overtaking another vehicle on the road, a small or big continuously blow such electric and/or air horn which produced a shrill and loud noise and which creates annoyance to every one who resides by the side of the road and to all pedestrians, including the persons travelling in the vehicles. The indiscriminate use of such horn is amounting to noise pollution in the city of Calcutta and congested areas of the State of West Bengal and that the same have adverse effect to the public health of the people which creates complications including mental restlessness, blood pressure and heart trouble and that is necessary in the interest of public at large in the State of West Bengal to stop such noise pollution arising out of unnecessary use of such electric and air horn deliberately."[70]

In *Gotham Construction* v. *Amulya Krishna Ghosh*[71] a civil case was filed by three individuals against a company for creating private nuisance by constant hammering noise of a workshop. Neighbours from vicinity had testified that the noise was terrific and that they were adversely affect by it.

It held that in view of evidence on record, it was not necessary that expert evidence ought to have been produced with regard to the level of noise and the scientific manner in which it could be controlled. In this case injunction was granted restraining the company from continuing the noise. It was further held that the said nuisance was of a continuing nature and hence no amount of damages could compensate the harm caused to the effected persons. An injunction against the company was only remedy.

The decision of the Allahabad High Court in *Radhey Shiam* v. *Guru Prasad*[72] is important for the general principles regarding noise pollution. The court laid down the guidelines to test the level of noise (Pollution) which will warrant such as injunction. The court relied heavily on *Dhana Lal* V *Chittar Singh*[73] and held that "a person can claim injunction to stop nuisance if in a noisy locality there is a substantial addition to the noise by introduction of some machines, instruments or performance at defendant's house".

The court accepted the principles in *Dhana Lal* v. *Chittar Singh*[74] case that:—

"Constant noise, if abnormal or unusual can be actionable nuisance if it interferes with one's physical comforts..... Even in a noisy locality, if there is substantial addition to the noise by introduction of some machine, instrument or performance at the defendant's premises which materially affects the physical comforts of the occupants on plaintiff's house, then also the noise will amount to actionable nuisance."

Vehicular pollution is one of the major source of air pollution. How existing legislation on environmental pollution does not effectively cover pollution by vehicles. Really speaking the Air (Prevention and Control of Pollution) Act, 1981 deals with noise pollution and pollution caused by motor vehicles. There is not much more litigation on pollution caused by motor vehicles than the case in noise pollution.

In *M.C. Mehta* v. *Union of India*[75] an application was filed under Art. 32 of he constitution in the public interest litigation sector. The submission before the court is to issue directions for closing down the hazardous industries located in densely populated area of Delhi and for regulation of Air Pollution caused by automobiles operating in the area as also the thermal units generating power for Delhi Electric Supply Undertaking.

A division bench of Ranga Nath Mishra C.J., M.H. Kania and Kuldip Singh JJ observed:—

"The awareness of interaction of man with his environment is of recent origin. The declaration of the United Nations Conference on the Human Environment held in Stockholm in June 1972 stated:—

"Man is both creature and moulder of his environment. Both aspects of man's environment, the natural and the man-made, are essential to his well being and to the enjoyment of the basic human rights even the right of life itself.

Principle No. 1 of the same declaration went to say:—

"Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generation....."

In *Gobind Singh* v. *Shanti Sarup*[76] the Sub-divisional Magistrate passed an order against the appellant U./s. 133(1) of the Cr. P.C. 1898 directing the demolition of the oven and the chimney which emitted smoke, and to cease from carrying on trade of a baker at the particular site. The order was upheld by the Supreme Court and Chandrachud C.J. has observed as under:—

".... the evidence disclosed that the smoke emitted by the chimney was injurious to health and physical comfort of the people living or working in the proximity of the appellant bakery and the upheld the order of the magistrate granting injunction in the interest of the public health, safety and convenience.[77]

In *P.C. Cherian* v. *State of Kerala*[78] The petitioner filed an appeal in the Kerala High Court against an order of Magistrate prohibiting him from carrying out the process of mixing carbon black with rubber. Carbon was released in very large quantities and caused a tremendous nuisance and health hazard. The court, upholding the order of the magistrate observed:—

"It is sheer common sense that if the atmosphere gets contaminated with carbon particles, visible or invisible there is a very risk that they would get themselves deposited on the bodies, and get into respiratory organs of the people residing in the neighbourhood. The evidence is that particles get deposited on the wearing apparel of the people and walls of building, not to mention other umpteen articles which may get affected by the deposit.This is therefore an outstanding instance of air pollution which has become a menace to people in the industrial cities. The term air pollution, according to the definition adopted by the W.H.O., is limited to the situation in which the outdoor ambient atmosphere contains material in concentrations which are harmful to men and his environment.[79]

In *M/s Nagarjuna Paper Mills Ltd.* v. *SDM* and *R.D. Officer Sangareday*[80] a similar point arose. The industrialist had meeting with the Pollution Control Board officials and had applied for clearance certificates. In the meanwhile on a complaint under Sec. 133, Cr. P.C., that pollution was endangering health and life and villagers and cattle, the magistrate ordered to stop functioning. The contention was raised that they had obtained NOC before commencing the business, and has applied for clearance certificate, the magistrate could not initiate action against them.

The second contention was that Water and Air Acts were enacted with a view of prevent and control pollution and the magistrate could not exercise the powers U/s, 133 Cr. P.C. to abate pollution as under these enactment, prevention and control of pollution was the duty of Pollution Board and not of magistrate. So magistrate could not encroach the power of the Pollution Board.

The Andhra Pradesh High Court held the absence of clearance certificate, till date, and evidence of pollution on record was enough reason for the magistrate to intervene and take action U./s. 133 Cr. P.C. The court held that the power of the Pollution Control Board in no way affect the power of a magistrate to abate nuisance caused by pollution.

In *Madhavi* v. *Thilakan*[81] it is alleged that repairs of autorickshaw, welding, painting and like operations are carried on from dawn to dusk and late into night, cause nuisance, air pollution and noise pollution. It is further alleged that fumes emanating form the workshop are positive health hazards.

Shankaran Nair J. who delivered the judgment observed under mentioned:—

"The right to enjoy life is a serene experience, in quality far more than animal existence, is thus recognized. Personal autonomy free from intrusion and appropriation is thus a constitutional reality. The right to life in peace, to sleep in peace and right to repose and health, are part of the right to live. We recognize every man's home to be his castle, which cannot be evaded by toxic fumes, or tormenting sounds. This principle expressed through law and culture, consistent with nature's ground rule for existence, has been recognised in section 133(1)(*b*). The conduct of any trade or occupation or keeping of any goods or merchandise, injurious to health or physical comfort of community, could be regulated or prohibited under the section.[82]

"To say that a workshop or factory should not be closed down, as it provides livelihood to some persons, unmindful of the consequences to others, would be to say the untenable. Constitutionally recognized values, cannot be ignored.[83]

The court held that a welfare state was bound to protect the right to life of its citizen and was also bound to protect the citizen's right to a healthy surrounding and peaceful life and the court ordered the closer of the workshop which emitted tremendous noise and air pollution. The court rejected the plea that the nuisance was justifiable on the ground that the workshop provided employment. The court finds it difficult to agree with this finding of the court as an order of closer may be justified in certain circumstances but the court should always make sure that the workers do not suffer of their employer's environment offences. In case of closure the court should specifically order full back wages be paid for any period during which the factory was ordered to remain closed or during which certain operations were stayed and in addition workers should be paid a minimum retrenchment compensation payable in cases of closure under labour laws.

In *Krishna Gopal* v. *State of M.P.*[84] the petitioner, a factory owner, put forth rather ingenious argument in his attempt to justify the noise and air pollution that in boiler in his factory caused. The petitioner was owner of a premises, and factory was manufacturing medicines in a residential area, claimed that one resident had complained of nuisance and thus complainant could not to termed as public nuisance U/s. 133, Cr. P.C. The petitioner further claimed that the boiler which caused noise pollution would not be heard even if one put an ear against the wall. The absurd argument was brushed aside by the court for being "too fantastic a claim to believe.

V.D. Gyani, J. who delivered the judgment observed as:—

> "Pollutants discharged from the "chimney" knows no frontiers of locality and very often they lead to damage not only to the locality or the particular area where pollution originates but also to the neighbouring localities and adjacent areas. Breathing itself becomes a problems in case of air pollution and the officers who are en-

trusted with the task to see that the air pollution is not permitted in residential localities .... can keep the law at bay and it is this callous disregard to the laws which at times has resulted in short of paralysis due to the corporate crime wave. It is tragedy that such corporate crime wave and criminal behavior on the part of such Authorities has not been made such a crime to be punished with deterrent punishment. Unfortunately wilful and knowing violation of laws resulting in all pollution caused by auto exhaust radiation and gas pipe line pipe safety standards are not considered crimes under the relevant statutes even if lives are lost as a result. Such crimes requires courage, not routine duty, by officials to enforce the laws against such outrages and Sub-Divisional Magistrate undoubtedly deserves a word of kudos. It should be remembered that environmental crimes dwarf other crimes to safety and property but the position of law as it stands in the matter of sentencing such environmental crimes is rather comfortable .... The society is shocked when a single murder takes place but air, water and atmospheric pollution is merely read as a news without slightest purturbance till people take ill, go blind or die in distress on account of pollutants that result in filling of pockets of few.[85]

Regarding scope of section 133, Cr. P.C. The court observed that—

"The nature of nuisance, the emission of smoke, from the boiler and its deleterious effect on the community is amply borne out from evidence on record. In such circumstances the requirement of section 133 Cr. P.C. is fully satisfied. Sub-section (1) (b) reads as follows:—

That the conduct of any trade or occupation or keeping of any goods or merchandise is injurious to the health of the community and that in consequence such trade or occupation should be prohibited or regulated or such good or merchandise be removed or keeping thereof is regulated.[86]

The words are wide in their amplitude and undoubtedly covers the present case. Manufacturing of medicines in a residential locality with the aid of installation of a boiler resulting in emission of smoke therefrom is undoubtedly injurious to health as well as the physical comfort of the community and there is no scope for any interference in this revision petition on that account.

The court further went to observe regarding air pollution caused due to emission from vehicles:—

"Auto exhaust is great cause of environmental pollution is a common site of at times the riders relish the noise to the distress and damage of others but no action is taken against such owners or riders of motor vehicles. Studies have revealed that these automobile emissions alone account for 70% of carbon monoxide, 50% of hydrocarbon, 35% of particulates of oxides of nitrogen in the atmosphere but air pollution in environment caused by industrial emissions is another contributor. If environmental pollution is to be extirpated firstly is should not be permitted, must be prevented and if at all it takes place should be sternly dealt with. Chemical fertilizers are doubly injurious and violate nature."[87]

In *M/s Mukesh Textile Mills (P) Ltd.* v. *H.R. Subramanya Sastry*[88] the court has discussed in detail the liability of factory and industry and discussed a number of cases. The appellant Mukesh Textiles Mills (P) Ltd. the defendant in the court below, has a sugar factory in Harige village, Shimoga District, Adjacent to the sugar factory, on the north, the respondents plaintiffs own several extents of land irrigated by distributary channel of the Barda Reservoir Canal.

The appellant stores molasses, a bye-product in the manufacture of sugar in the factory premises. At the material point of the time, some 8000 tonnes of molasses were stored in the earthen tank.

The northern embankment of the earthen tank had become delapidated having been dug into by rodents and as a result a large quantity of molasses in the tank overflowed into water channel, inundated and spread over respondent's land. The undation of water, fully laden with molasses, damaged and standing paddy and sugarcane crop raised by the respondent brought civil suit in the court of civil judge and later on in the judicature of the Karnataka High Court.

The court relied heavily on a number of foreign court's decisions and made elaborated analysis of rule of absolute liability.

In *Donoghue* v. *Stevension*,[89] Lord Atkin stated as under:—

> "The rule that you are to love you neighbour becomes in law, you must not injure your neighbour, and lawyer's question, who is my neighbour? Receives a restricted reply. You must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbour, who, than, in law is my neighbour? The answer seems to be the persons who are so closely and directly affected by my act that I ought reasonably to have them in contemplation as being so affected when I am directing my mind to the acts or omissions which are called in questions.[90]

The second ground of liability arise by storing a large quantity of molasses on the land had put the land to a non natural user an if a person collects on his premises things which are intrinsically dangerous or might become dangerous, if they escape, he has a liability, if things so stored escape and cause damage. This the rule in *Rylands* v. *Fletcher*[91] in which Blackburn J. enunciated the rule as under:—

"We think that true rule of law is that the person who for his own purposes brings on his lands and collects and keeps there anything likely to do mischief if it escapes, must keep it at his peril, and if he does not do so, is prima facie answerable for the damages which is the natural consequence of its escape."

By storing such large quantities of liquid close to respondent boundary, appellant choose to assume a relationship with an outsider and law requires of him to conduct himself as a reasonable man with adequate skill, knowledge and resources would have conducted himself. In *British Railway Board* v. *Herrington*[92] Lord Reid said:—

"... if a person chooses to assume a relationship with the member of the public.... the law requires him to conduct himself as a reasonable man with adequate skill, knowledge and resources would do. He will not be heard to say that in fact he could not attain that standard. If he cannot attain that standard he ought not to assume the responsibility which that relationship involves....[93]

In the present case the molasses escaping into the water channel — and through, it is the respondent's land — is an unbrokable chain of events. There was no conscious act of volition of an independent third party superimposed on the chain of events. The circumstances where the chain of events can be said to have been broken, Salmond States:—

"The rule of *Rylands* v. *Fletcher*[94] is not applicable to damage done by the stranger. Thus, if trespasser lights a fire on my land I am not liable if it burns my Neighbours property, unless with knowledge or presumed knowledge of its existence. I have failed to extinguish it within a reasonable time. So, in *Box* v. *Jubbs*,[95] the defendants were held not responsible for damage done through an overflow from their reservoir, when that overflow was caused by an act of third person who emptied his own reservoir into the stream which fed that of the defendant. So in *Richard* v. *Lothian*[96] it was by the judicial committee on this ground that occupier of an upper storey of a block of flats was not liable for damage done to the occupier of lower storey by the escape of water from lavatory, when the escape was caused by the malicious means a conscious or deliberate act which could not reasonably have been foreseen."

As to circumstance in which the chain of events is not seen and liability is not expected, Charlesworth, says:—

"In the Oropesa, a collision occurred at sea between Oropesa and Manchester Regiment, in consequence of negligent navigation of the former vessel... it was contended that the death of the seaman was the result of the Manchester Regiments Captain's decision to put to sea in the lifeboat and not of original negligence of the Oropesa, which had caused the collision. The court of appeal held that since the captains decision was a reasonable one in the circumstance, it did not constitute a novus actus interveniens.[97]

After making observations and survey of all the circumstances the court held that there was no plea of mitigation and the defendant might not be held liable to have discharged burden and the court allowed the appeal partly.

In *B. Venkatappa* v. *B. Lovis*[98] the appellant preferred an appeal from the order, in a civil suit filed by the respondent and contended that in law he was owner of the land and was entitled to use his property and the column of the above his property in a manner he thought fit. The court shunned the argument that ownership entitled one to an absolute right to use a property. The court upheld that the ownership did not entitle on to unreasonable use of the land, in a manner that may even cause nuisance to the public.

For issuing injunction to restrain the appellant from constructing ovens it was contended that without any proof of injury or discomfort to the respondent on account of the emanation of the smoke from the chimney, there was no cause of action for the plaintiff to lay the action seeking mandatory injunction.

The appellant relied on passage in Halsbury Law of England "When Smoke Amounts to Nuisance. Even when accompanied by noise or noxious vapours and although not injurious to health, smoke may constitute an actionable nuisance or be the subject of indictment provided that the nuisance produced is such as affects materially to interfere with the ordinary comfort. The fact the smoke arose from premises in a manufacturing town does not affect the question of nuisance if it can be shown that the annoyance otherwise caused has been materially increased. Nuisance of this kind is now to a substantial extent regulated by statute.

But the court rejecting the contention observed:—

"It is common knowledge that when the smoke emanates, it would also pass through the holes of the chimney and when the smoke is thus emanating, it causes (sic) and would be injurious to health of the Neighbours. Therefore, it would cause discomfort in the enjoyment of the property and injuries to the health as well. The maxim *conjust est solum ejus est usque ad coelum* would equally apply to the enjoyment on the open space. Smoke, fumes and smell, either together or singly, which materially interfere with the ordinary physical comfort of human existence, constitute a nuisance in law. They need not to be actually noxious or injurious to health. It is immaterial whether there are other sources of discomfort in the neighbourhood...[99]

In *Union of India* v. *Union Carbide Corporation*[100] which is popularly known as the Bhopal Gas Leak case is the land mark judgment of the court in order to provide relief to the sufferers caused by leakage of MIC Gas resulting in environmental pollution before making deep study it is expedient to summarize the event related to Bhopal Gas Leakage:—

Following is the history of litigation in the Bhopal Gas Case:

Dec. 2/3 1984 : Tragedy strikes killing over 3,700 persons and affecting about half a-million.

Dec. 7, 1984 : First compensation case filed by American Lawyers in several US Courts.

Dec. 22, 1984 : A writ petition filed in the Madhya Pradesh High Court at Jabalpur seeking interim relief for the victims.

Mar. 29, 1985 : Parliament passes the Bhopal Gas Disaster (Processing of Claims) Act, 1985.

April 9, 1985 : Union of India files a complaint before the US District Judge Justice Keenan for three billion US dollars compensation for victims.

June 28, 1985 : Union Government moves before the US court for consolidation of all cases pending in various courts.

July 31, 1985 : Union Carbide Corporation seeks dismissal of consolidation action.

May 12, 1986 : Justice Keenan dismisses claims of the Union of India.

Sept. 9, 1986 : Union of India files a representative suit against UCC in the court of District Judge, Bhopal.

Jan. 14, 1987 : US court of appeal dismisses petitions of 145 individual plaintiffs and cross appeal of UCC.

May 1987 : Union of India files appeal in the US Supreme Court against the dismissal by US court of appeal.

Oct. 1987 : The US court declines to grant the writ moved by the Union of India.

Dec. 17, 1987 : The District judge, Bhopal directs UCC to pay interim relief of Rs. 350 crores.

April 4, 1988 : The Madhya Pradesh High Court reduces interim relief from Rs. 350 crores to 250 crores.

The Supreme Court mediates a 470 million US dollar (Rs. 715 crore) settlement in the case.

April 14, 1990 : Supreme Court orders interim relief of Rs. 200 per month to the victims family.

Oct. 3 1991 : The Supreme Court upholds the validity of the settlement in review.

In *Charan Lal Sahu* v. *Union of India*[101] the Supreme Court upheld the Bhopal Gas Disaster Act, 1985 and held that the state had rightly taken over exclusive power to represent and act in place of every person entitled to make claim.

The decision rendered by the apex court can not be said to be praisable as the court itself had scraped the right to free legal aid as propounded by the same court in *Bandhua Mukti Morcha*[102] case which is popularly known as Asiad case. The judge of the Supreme Court cut a good jock upon the poverty and misfortune of thousands of Indians who had their constitutional right to have free legal aid.

Per Rang Nath Mishra J. (for himself and A.M. Ahmadi J.) "very few of them are capable to prosecuting such a litigation in this country not to speak of the necessity to run to a foreign court".

This is starling conclusion, One can not feel hesitation to say that the Supreme Court adopted callous attitude towards the people suffered due to Gas leak as their illiteracy and poverty have been used as flimsy excuse to deny their right by propounding the theory of "compensatory" principle.

Apart from this there are also several cases related to various problems of environment and specially of air pollution where the court has left no effort to protect and improve the environment.

In *Environmental and Ecological Protection Samithy, Agali* v. *Executive Engineer and Other*[103] a writ petition was filed against the Government's order to allow clear felling of bamboo clusters in certain regions. The contention is that cutting and removing of bamboo clusters will lead to an environmental disaster.

The court discussed the scientific authorities in support of principle evolved and judgment delivered by Shankaran Nair J. would go in long way in the development of environmental law, Justice Shankaran Nair has observed:—

"Environmental deficit or degradation is caused largely by pollutants generated by industries, Carbondioxide (Co_2), Oxide of nitrogen

(No_2), Sulphur (So_2) chlorofluro carbon, carbonmonooxide ... or some of the major pollutants, causing Green House warming ozone depletion, and related adverse effects. These, in turn, make an impact on forest and vegetation. Studies reveal that toxic emissions, cause acid rains, World Wildlife Fund (WWF) surveys indicate that 52% of the forests in Germany and other European countries have been affected by acid rains. Man made deserts have come into existence in may parts.[104]

In *M.R. Pillai* v. *Executive Officer, Pathiyoor Panchayat*[105], the petition was filed to issue the writ of mandmus commanding the respondent to close down the cashew processing factory as the black smoke emitted from the factory increases asthama and affects health of the people in the locality and of petitioner who is of old age.

The court realied on Vellore *Citizens Welfare Forum* v. *Union of India*[106] and observed that in view of the above mentioned constitutional and statutory provisions we have no hesitation in holding that the precautionary principle and the polluter pays principle are part of the environmental law of the country.

The court also realied on *Olium Gas Leak Case*[107] (*M.C. Mehta* v. *Union of India*) and accepted the principle of strict ability. Further the court also accepted the principle laid down in *P.A. Jacob* v. *Superintendent of Police*[108] and observed compulsory exposure of unwilling persons to dangerous and disastrous levels of noise, would amount to a clear infringement of their constitutional guarantee of right to life under Art. 21.

The Kerala High Court in the instant case ordered to close down the cashew processing factory and observed as under.

"Air pollution shows that the air we breathe, is a mixture of nitrogen and oxygen with minor constituents like carbon dioxide and trap gases. Pollutants are substances which are not normally present in the air e.g. dust, smoke industrial and automobile exhaust, gaseous and particulate matter. Nature and amount of these pollutants vary from place to place depending upon population, vehicular density, location of industrial units etc. Lungs are the major organs affected by the air pollution because of the direct contact of the respiratory track with outside atmosphere. The spectrum of functional and pathological reactions of the lungs to various exposures in wide. Chronic bronchitis and airways obstruction is the result of long term exposure to air pollution. Exposure to many of the occupational and environmental pollutants can precipitate under/or aggravate asthma.[109]

M.C. Mehta v. *Union of India*[110] is one of the most leading and recent decision of the Supreme Court of India relating to protection to environment pertaining to Articles 21, 48A and 32, is polularly called Taj Trapezium case.

According to the petitioner, the foundries and industries and refinery situated in Mathura are the major sources of damage to the Taj. The sulpherdioxide emitted by Mathura refinery and the industries when combined with oxygen with the aid of moisture in the atmosphere forms sulphuric acid called "Acid Rain" which has corroding effect on the gleaming white marble. These are also responsible for polluting the ambient air around Taj Trapezium (TTZ). Inside the Taj decay is more apparent and spots are visuable. The petitioner finally saught appropriate direction to the authorities concerned to take immediate steps to stop air pollution in TTZ and save the Taj.

Justice Kuldip Singh who delivered the judgment opened the paragraph with view to highlight the importance of the magnificent Taj.

Taj Mahal — is the "King Emperor" amongst the World-Wonders. The Taj is the final achievement of the Moghul Art. It represents the most refined aesthetic values. It is fantasy like gradeur. It is perfect culmination and artistic interplay of the architects' skill and the jewellers inspiration. The marble-in-lay walls of the Taj are amongst the most outstanding example of decorative workmanship. The elegant symmetry of its exterior and the aerial grace of its domes and minarets impress the beholder in a manner never to be forgotten. It stands out as one of the most priceless national monument, of surpassing beauty and worth, a glorious tribute to man's achievement in Architecture and Engineering.[111]

After considering to reports of Varadharajan Committee and several reports of NEERI the court delivered the historic judgment. The Varadharajan committee recommended "steps may be taken to ensure that no new industry including small industry or other units which can cause pollution are located north west of the Taj Mahal .... Efforts may be made to relocate the existing small industries particularly the foundries in an area south east of Agra beyond the Taj Mahal so that emissions from these industries will not be in direction of the manuments..... Appropriate authority be created which put monitor emissions by industries as well as the air quality at Agra on a continuous basis. This authority should be vested with power to direct industries causing pollution to limit the level of emission and specify such measures as are necessary to reduce the emission.[112]

The National Environment Engineering Research Institute gave

"Overview report" in 1990 regarding status of air pollution around the Taj.

"The source of pollution, including small and medium scale industrial units, are scattered all around Taj Mahal. High air pollution load is thus pumped into the Taj air shed. Sudden rise in concentration level are often recorded in all directions in gaseous as well as particulate pollutant depending upon the local micro climatic condition.[113]

Regarding the impact of air quality on the Taj it was observed :

"The rapid industrial development of Agra-Mathura region has resulted in acidic emissions into the atmosphere at an alarming rate. This causes serious concern on the well being of Taj Mahal .... The gaseous pollutants being acidic in nature, significantly impact both the biotic as well as the abiotic components of the ecosystem like plants and building material like marble and red stone."

The NEERI examined in detail the decays mechanism and status of the Taj marble and stated how the deterioration of marble occurs. The deterioration of marble occurs in two modes i.e. in the first mode weathering takes place if marble is sheltered under domes and cornices and protected from direct impact of rain and crust is form which exfoliates due to mechanical stress. In case of marble exposed to rain, gradual reduction of materials occurs and reaction products are washed away. The commulative effects of all pollutants are more damaging.

The effect of air pollution on Taj is visible from the report of the NEERI as under:—

The Taj Mahal marble sample analysed by NEERI in 1993 revealed that .... origin of soot can be traced back to fuel consumption around the sensitive receptor while quartz is derived from geocrustal origin and causes surface abrasions .... the presence of soot reduced the aesthetic value of the monument. Ambient air around Taj Mahal is polluted primarily from point/line sources and has adverse impact on building material by alteration of marble and sand stone structure....[114]

The court tried to search the feasibility of alternative fuels to be consumed by the industry but the use of propane or any other safe fuel instead of coal or coke by industries in the TTZ was not possible or feasible due to high cost. The feasibility of utilization of compressed natural gas was also not possible due to techno-economic problem. Hence the court ordered for relocation of industries located in the area of TTZ. And court observed:—

"The industries, out of 292 industries listed which are not in position to obtain gas connections and also the industries which do not wish to obtain gas connections may approach/apply to the corporation... for allotment of alternative plots in the industrial estates outside Taj Trapezium. The corporation/government shall finally decide and allot alternative plots .... to the industry which are seeking relocation. The relocating industries shall setup their respective units in new industrial estates out side TTZ. The relocating industries shall not function and operate in TTZ beyond December 31, 1997. The closure by the December 31, 1997 is unconditional and irrespective of fact whether the new unit out side TTZ is completely set up or not. The Deputy Commissioner Agra and the Superintendent (Police) Agra shall effect the closure of industries. The Government/corporation shall render all assistance to the industries in the process of relocation... The state government and all other authorities shall be set up unified single agency consisting of the departments concerned to act as a nodal agency to sort out all the problem of such industries.[115]

The workmen employed in 292 listed coke/coal using industries located in Agra which are directed to be relocated or closed to prevent degradation to Taj-Mahal shall be entitled to following rights and benefits:[116]—

(*a*) The workmen shall have continuity of employment at the new town and place where the industry is shifted. The terms and conditions of their employment shall not be altered to their detriment.

(*b*) The period between the closure of the industry in Agra and its restart at the place of relocation shall be treated as active employment and the workmen shall be paid their full wages with continuity of service.

(*c*) All those workmen who agree to shift with the industry shall be given one year's wages as 'shifting bonus' to help them to settle at the new location. The said bonus shall be paid before January 31, 1998.

(*d*) The workmen employed in the industries who do not intend to relocate/obtain natural gas and opt for closure, shall be deemed to have been retrenched by May 31, 1997, provided they have been in continuous service (as defined in Section 25-B of the Industrial Dispute Act, 1947) for not less than one year in the industries concerned before the said date. They shall be paid compensation in terms of Section 25-F(*b*) of the Industrial Dispute Act. These workmen shall also be paid, in addition, six years wages as additional compensation.

(*e*) The compensation payable to the workmen in terms of this judgment shall be paid by the management within two months of the retrenchment.

(*f*) The gratuity amount payable to any workman shall be paid in addition,

Thus the courts in India play a very vital role in the preservation and protection of environment and control of air pollution.

7. REVIEW

From the above discussion it becomes quite apparent that the matter of control and management of air pollution has been given primary importance only in the Air Pollution Control Act of 1981. All prior laws which find certain provisions having a bearing on the subject were codified with the primary objective of regulating factories, industries, mines and boilers etc. The matter of control of air pollution has been given only secondary importance in these earlier enactments.

But, the legislative measures can succeed only through the involvement of the industries and the people. An aware and informed public opinion can play a positive role in promoting environmental pollution control programmes to help supplement official efforts to check the dangerous increase in the level of air pollution. Hence, common man should be given education so that he can make his individual positive contribution towards control of pollution. Further, it is very necessary to arouse civic consciousness by introducing the subject of environmental issues in educational institutions; through radio, television, newspapers, periodicals etc.

Similarly, contribution can also be made by the industries both in financial as well as physical terms. They themselves can take the measures for the control of pollutants by introducing built-in-systems and thus can involve themselves for the solution of the problem by joining with local and other appropriate authorities.

In the context of air pollution, it is also a true fact that some people will be more sensitive than others to a given amount of pollution. For example, people with pre-existing chronic bronchitis, emphsema, or asthama suffer more when the sulphur oxide and particulate levels go up than people without these diseases. Therefore, case should be taken, while controlling air pollution, to protect the more sensitive groups from being unduly affected by a level of air pollution or any other environmental insult, for that matter, that may not affect less sensitive groups.

After the enactment of the Air (Prevention and Control of Pollution) Act, 1981, the increasing growth of air pollution in India has been due to the failure to enforce properly and effectively the existing legislative measures rather than the absence of effective legislative provisions. According to this author the main reasons for this are:

(*i*) Failure of different bodies entrusted with the enforcement of air pollution control law, to act or to act in concert and co-operation.
(*ii*) Lack of aware and informed public opinion.
(*iii*) Lack of political will.
(*iv*) Lack of money, technical knowledge and personnel.
(*v*) Inadequacy of penal provisions in the Air Act 1981.

Further, there are no arrangements to orient and train the existing staff in the municipal bodies and the pollution Control Boards for the purpose of undertaking conscious pollution control measures.

The Judicial response to control air pollution and environmental protection can be appreciated from the decided cases such as M.C. Mehta case,[117] Dehradun-Mussorie Hills case,[118] Oleum Gas Leakage case,[119] Hazardous Industries case of Delhi,[120] Ganga Pollution case,[121] and the Taj Pollution Case.[122] Thus the courts play very vital role in the preservation and protection of environment from air pollution.

The judicial approach to deal with problems of environmental pollution was influenced to a very great extent by the common law doctrine of strict liability as laid down in *Rylands* v. *Fletcher*.[123] However, there appears to be marked difference in the judicial approach. While under the rule of strict liability, a person was held liable as soon as a thing escape from the premises of the person and causes injury to others. In pollution problems courts do not stop here. They go a step further and enquire into the possibility of any alternative solution of the problem. If any alternative solution is available or feasible, the courts have preferred to maintain the status quo.

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2. See Arthur C. Stern, Air Pollution, New York, Academic Press, 1977, p. 110; P.C. Mishra, Fundamentals of Air and Water Pollution, New Delhi, Ashish Publication, 1990.
3. See NEERI, Air Quality in Selected Cities in India, 1978-79, National Environmental Engineering.

4. Research Institute, Nagpur, 1980; Rohrman, Science, 1967, pp. 156, 931.
5. Arthur C. Stern, Air Pollution, New York, 1977, p. 111.
6. The diseases which are caused due to air pollution are: Bronchitis, Myocardial Pneumonia, Coronory, Lung Cancer, Vascular lesions of the nervous system, etc.

6a. See Satish Chandra, "National Canceration of Air Pollution: Some Legal Remedies", in Paras Diwan (ed.), Environment Protection, 1987, p. 338.

6b. Under Section 2(*b*) of the Boilers' Act, 1923, "boiler" means any closed vessel exceeding five gallons in capacity which is used expressly for generating steam under pressure and includes any mounting or other fitting attached to such vessel, which is wholly or partly under pressure when steam is shut off.

6c. The Boilers' Act, 1923, S. 27A.

7. *Ibid.*, S. 28.
8. *Ibid.*, S. 29.
9. *Id.*, S. 5.
10. *Id.*, S. 6.
11. *Id.*, S. 7.
12. *Id.*, S. 7(4).
13. *Id.*, S. 7(5).
14. The Factories Act, 1948, S. 92.
15. *Id.*, S. 94.
16. *Id.*, S. 106.
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19. The Mines and Minerals (Regulation and Development) Act, 1957, S. 5; see also C.M. Jariwala, "Mining and Environment: Indian Law Scenario", 37 J.I.L.I. (1995) pp. 431-41.
20. *Id.*, S. 19.
21. *Id.*, S. 21.
22. *Id.*, it may also be noted here that in pursuance of the powers conferred by Section 21 the Central Government in its notification on May 30, 1969 authorised (1) the Controller, Indian Bureau of Mines; (2) the Controller of Mines, Indian Bureau of Mines; (3) The Regional Controller of Indian Bureau of Mines, and (4) the Mineral Economist of Indian Bureau of Mines, to prefer complaints in writing in respect of any offence punishable under the Act or any rules made thereunder. See Harpal Kaur Walia, "Air Pollution: A Study of the Indian Enactments" in Paras Diwan (ed.), Environment Protection, 1987, p. 321.
23. The opinion of the corporation shall be conclusive and shall not be challenged in any court, see S. 417(3).
24. Section 481, Part J, Clause 19. See also Sections 416-419.
25. The Air (Prevention and Control of Pollution) Act, 1981, Sections 16 and 17.
26. *Id.*, Sections 3-6.
27. *Id.*, "Statement of Object and Reasons" and, Sections 21, 22, 24 and 50.
28. *Id.*, S. 19(1), (3) & (4).
29. *Id.*, S. 19(5).
30. *Id.*, S. 21(1).
31. *Id.*, S. 21(2) and (3).
32. *Id.*, S. 22.
33. *Id.*, S. 37(1).
34. *Id.*, S. 23(1).
35. *Id.*, S. 23(2) and (3).

36. *Id.*, S. 38(*e*).
37. *Id.*, S. 24(1).
38. *Id.*, S. 39.
39. An appeal can be made by the aggrieved person against the decision of the State Board under Section 31 of the Act. within thirty days from the date of communication of the order. The appellate authority (constituted by the State Government and consisting of a single or three persons) after hearing the appellant and the State Board, shall pass orders as to the reasonableness or otherwise of any condition imposed.
40. AIR 1987 SC 965.
41. *Ibid.*, p. 974.
42. *Ibid.*
43. *Ibid.*, p. 981.
44. *Ibid.*
45. *Ibid.*, p. 982.
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117. M.C. Mehta v. Union of India, AIR 1992 SC 382.
118. Rural Litigation and Entitlement Kendra, Dehradun & others v. State of U.P. and others, AIR 1985 SC 652.
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CHAPTER FIVE

Control of Noise Pollution : Need for a Law

1. INTRODUCTION

Noise is a major factor of environmental pollution: The pollution by noise is the creation of modern age[1] and it has increased in many folds with the development of science, technology and high speed means of transport. The ill effects of noise pollution are in no way less harmful than those of water, soil of air pollution. An international urban planner victor Gruen once called noise 'a slow agent of death'. An American environmental expert predicts that if the noise level continues at the present rate most people living in major metropolitan areas will be deaf in the year 2050.[2] Noise pollution can disturb a person in his normal work. It could cause distraction, annoyance, torture to a tired, ailing or sick person. It could also be a contributory cause for health problems like impaired hearing, high blood pressure and nervous breakdown. The extent of damage may depend on the duration and intensity of noise. Thus it is high time for us to realise the importance of control of noise pollution and management of environment.

2. WHAT IS NOISE POLLUTION?

Noise means unwanted and undesired sound. Thus otherwise sound and noise can be taken to mean the same thing, but in considering our acoustic environment we must differentiate between these two terms. It is only when the effects of a sound are undesirable then it may be termed as noise.[3] The presence of noise in the open atmosphere or in a confined space is generally considered undesirable, except possibly by the person responsible for it. This is termed as noise pollution. In the latter case noise pollution does not exist in the space immediately surrounding the person.[4]

Thus when the loudness of the sound is irritating or unbearable we regard it as a noise pollution. A decibel (DB) is the standard unit for the measurement of noise. The zero on a decibel scale is at the threshold of hearing, the lowest sound pressure that can be heard. On this scale, according to Smith, the noted industrial psychologist of the 20th century, 20 DB is whisper, 40 DB, the noise in a quite office, 60 DB is normal conversation, 80 in a bus, 100 in a train, 120 in loud thunder and 140 DB is the level at which sound becomes physically painful.

It is appalling how little attention is being paid to the scourge of noise pollution in our country despite warnings by environmentalists that it would be the number one cause for diseases in the developing countries in the 21st century. The noise level in the four metropolitan cities is between 85 and 95 decibels against the World Health Organisation limit of 45 decibels and a 70 decibels threshold of tolerance beyond which sound waves begin to hurt. In Bombay, which is the noisiest city in the country, the level of noise is as high as 105 decibels in certain areas and atleast 30 per cent of the people are affected acutely by noise. In certain industrial areas of Bombay and Madras upto 60 per cent of the workers suffer from hearing loss due to noise pollution.[5] The noise level thus doubles every six years, taking its toll of our hearing. It may be possible that by 2000 A.D. no one above the age of ten will hear properly.

3. SOURCES OF NOISE POLLUTION

There are several sources of noise pollution. These sources of noise pollution are:

- (*i*) Industry,
- (*ii*) Construction work,
- (*iii*) Traffic noise including engine and horn,
- (*iv*) Power Saws,
- (*v*) Air Craft noise,
- (*vi*) Demolition sites,
- (*vii*) Radio, T.V. and Loudspeakers,
- (*viii*) Fire Crackers,
- (*ix*) Horticulture equipment,
- (*x*) Working of Agricultural machinery,
- (*xi*) Surface Transport,
- (*xii*) Projection of Satellites in Space.

Similarly, the supersonic transport, if put into practice will be a cause of concern.[6] The researchers of noise say that noise levels in excess of 90 decibels for continuous periods can cause loss of hearing. A single exposure of 150 decibels is known to cause permanent injury to the internal mechanism of the ear.

4. EFFECTS OF NOISE POLLUTION

Noise pollution has many ill-effects on living as well as non-living things. It has auditory effects like loss of hearing. Environmentalists say that loud and continuous noise can cause high blood pressure, cardiac disturbances, peptic ulcer, gastro-intestinal problems, allergy, irritability, infertility, insomnia, and of course deafness, among other diseases. Further, its effect on human being may be classified into three categories namely, physiological, psychological and personological.

(A) Physiological Effects

Intense and shrilling noise produces psychological and physiological effects on human body. Prolonged chronic noises can also produce stomach ulcers as it may reduce the flow of gastric juice and change its acidity. It may lead to abortions and other congenital defects in unborn children.[7] Several birds have been observed to have stopped laying eggs.[8]

Some empirical research conducted on animals (specially on pregnant female mice) reveal that aircrafts taking off which brings in 120 to 150 decibels caused miscarriages in them. Similarly, high noise is capable to create these disturbances in human beings also. An analysis of more than 225,000 births in the Los Angels area by Dr. Nowell Jones,[9] showed that there were more birth defects among babies whose mothers lived near the international airport than those who lived in a quieter sections.

(B) Psychological Effects

Many psychological changes are recorded as a result of exposure to high level noise in human beings as well as animals. Noise can cause nervous irritability and strain in muscles. House wives working in kitchen with all kinds of electric gadgets have been seen to get headache due to noise and vibrations of these gadgets. Likewise people working in printing presses are prone to such effects and become deaf due to such noise. Noise is also considered as the genesis of stress disease like ulcers.

(C) Personological Effects

If the injurious effects of intense and shrilling noise tend to persist for long, they do cause stable maladaptive reactions in the individual disturbing histotal personality build up. This generally results into the lowered performance level among children that further may develop a feeling of inadequacy, lack of confidence, poor perception about ownself which may jeopardize their optimal personological development as a growing child.

(D) Effects on Non-Living Things

The intense noise effects adversely to the non-living things also, viz., buildings etc. The cracks in the city of the Recoco Church at Stemhausan were caused due to some booms.[10] This kind of adverse effect is created by fast moving jet planes. The sound waves left behind by jet planes are known as sonic booms. When these booms hit the ground they cause rattling of window panes or even damage to building structures. Sonic boom is expressed in March Units.[11]

5. GENERAL MEANS FOR CONTROL OF NOISE POLLUTION

We find out ways and means to control the noise pollution then framing of various laws for its control would be an easy task for a Legislature. Hence, there are four general means for control of noise pollution. These are:

(A) Co-operation between Town Planners and Environmental Authorities

In every big city an environmental authority should be constituted consisting of experts in ecology and other allied sciences. This authority would be certainly useful for the planners of a city for development plans. The planners with the co-operation of the authority can prevent a rise in noise levels. When a plan is laid for further development of a city or a new city is planned, then it would become incumbent on the part of the planners to get their plans cleared from the environmental authority. The town planners and environmental authority will have to devise certain methods by which noise produced by 'construction work' and traffic be controlled. This aid can be achieved if both town planners and environmental authority co-operate with each other while making plans for development.

(B) To Form 'Noise Free Zones' and 'Noise Abatement Zones'

The easiest and cheapest method to control noise pollution, to a certain degree, is to form various 'noise free zones'.[12] In these zones it is imperative that no sound by traffic, construction works, loudspeakers and amusement gatherings be made inside such zones. To begin with such zones be made around all schools, colleges, hospitals and places of worship. The area of such zones can be enlarged further. On the other hand, noise abatement zones' can be introduced in those areas where noise pollution is very high. The purpose of noise abatement zones is to reduce the noise pollution to the optimum minimum. Thus by making these zones, the noise pollution can be reduced effectively to the desired levels.

(C) Defensive Measures for Noise Reduction

Noise can also be reduced by other methods in which some defensive measures are applied and these are as follows:

(*i*) Noise reduction at source
(*ii*) Screening of the noise source
(*iii*) Screening of the receiver
(*iv*) Removal of the noise source or removal or the receiver.

(*i*) Noise reduction at source: Generally we use several methods and machinery, in such a way that they produce a lot of noise pollution unnecessarily; though by a slight change in machinery and methods a lot of noise can be reduced. It is usually found in many industrial units that machines play even when there is no work. A machinery should be stopped to function when there is no work. Much of the noise may be due to inefficiency of the machinery, e.g., damaged fan blades, blunt saws, worn bearing and sometimes loose metal sheets. If these defects are repaired, the noise level can be decreased to a great extent. The substitution for a noisy process by a quieter one is desirable, e.g., grinding instead of chopping, welding, instead of reveting. Therefore, noise can be reduced if certain checks are made on the source.

(*ii*) Screening of the noise Source:— Noise level can be lowered if the noise source is screened by thick walls and other noise absorbing materials. If a machinery is operating in open, it is bound to produce more sound than a machine operating in covered room. If the machinery is in open near the residential area of a factory the machinery can be moved to the other side of the factory so that to permit the structure of the factory building to act as a noise screen. Heavy barrier around the machinery may prove better sound insulation. Rubberised material and anti-vibration pads, if used, can produce better results in reducing the noise in factory areas.

(*iii*) Screening of the receiver:— In most of the industries, noise is an essential part of their machines used there, and if a worker is continuously exposed to sound-hazards for long, he may suffer from annoyance, loss of efficiency and damage to hearing. It has become necessary that employees be given ear defenders (or car plugs) to protect them from such losses.

Actually, residents who live near roads suffer most from traffic noise and it is up to town planners to plan their schemes for the insulation of residential buildings from noise and vibration. This restriction can be imposed at the time of approval of maps for construction of residential buildings. A lot of noise can be absorbed by planting those trees which are capable to absorb sound.

(iv) Removal of the noise source or removal of the receiver: Noise pollution can be controlled by removal of the noise source or removal of the person affected by it. In the first case if a machinery is near the residential site of factory, it can be replaced to other remote site of the factory. This is very true in case of an aerodrome which is situated very near to residential areas. Aerodromes should be removed from a dense pullulated area to another remote end of a city. In the second case if a person is very sensitive himself then he can leave that area for his own sake, otherwise a very little noise can make them annoyed and nervous.[13]

(D) Traffic Control

One of the easiest way to control noise and vibration from heavy vehicles is to put restrictions on heavy vehicles to play on certain routes/ hours of traffic. Construction of new routes and flyovers can also dilute heavy traffic on certain routes and thus can control noise and vibration.

6. EXISTING LEGAL PROVISIONS FOR CONTROL OF NOISE POLLUTION

In India, there is no law exclusively dealing with the problem of noise pollution, whereas developing countries of the world have enacted specific laws to control the noise pollution. Mention may be made here of two such enactments. In England, there is Noise Abatement Act of 1960. Section 2 of the Act provides that loudspeakers shall not be operated (*a*) between the hours of nine in the evening and eight in the following morning for any purpose; (*b*) at any other time for purposes of advertising any entertainment, trade of business. These are some exceptions provided like use of loudspeakers by the police, fire brigade, etc. In United States of America, there is Noise Pollution and Abatement Act, 1970 for regulating control and abatement of noise pollution.

We only have some stray provisions here and there for the control of noise pollution despite the fact that public health has been a matter of great concern for all of us.

Article 48-A of the Indian Constitution provides that the state shall endeavour to protect and improve the environment to safeguard the forests and wildlife of the country.

Article 51A(*g*) provides further that is shall be the duty of every citizen of India "to protect and improve the natural environment including forests, lakes, rivers and wild-life, and to have compassion for living creatures".

(*i*) *Law of Crimes and Control of Noise*

Section 268 of the Indian Penal Code reads:

Public Nuisance: "A person is guilty of public nuisance who does any act or is guilty of an illegal omission which causes any common injury, danger or annoyance to the public or to the people in general who dwell or occupy property in the vicinity, or which must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public rights."

A common nuisance is not excused on the ground that it causes some convenience or advantage. However, this provision of I.P.C. is inadequate to cope with the increasing menace of noise pollution.

Section 290 states:

"Whosoever commits a public nuisance in any case not otherwise punishable by this Code, shall be punished with fine which may extend to two hundred rupees."

Under section 133 of the Criminal Procedure Code, the Magistrate has the power to make conditional order requiring the person causing nuisance to remove such nuisance.[13a]

(*ii*) *Industrial Laws and Noise—Factories Act, 1948*

Section 11 Cleanliness:

1. Every factory shall be kept clean and free from offluvia arising from any drain, privy or other nuisance, and in particular:

(*a*) accumulation of dirt and refuse shall be removed daily by sweeping or by any other effective method from the floors and benches of workrooms and from staircases, and passages and disposed off in a suitable manner:

(*b*) the floor of every workroom shall be cleaned at least once in every workroom shall be cleaned at least once in every week by washing using disinfectant, where necessary, or by some other effective method.

(*c*) where a floor is liable to become wet in the course of any manufacturing process to such extent as is capable of being drained, effective means of drainage shall be provided and maintained; and

(*d*) all inside walls and partitions, all ceilings or tops of rooms and all walls, sides and tops of passages and staircases shall,—

1. Where they are painted* otherwise than with washable water paint or varnished, be repainted or revarnished at least once in every period of five years;
   - *(*i*) where they are painted with washable water paint, be repainted with at least one coat of such paint at least once in every period of three years and washed at least once in every period of six months;
   - (*ii*) where they are painted or varnished or where they have smooth impervious surfaces, he cleaned at least once in every period of fourteen months by such method as may be prescribed;
   - (*iii*) in any other case, be kept white-washed or colour-washed, and the white-washing or colour-washing shall be carried out at least once in every period of fourteen months.
   - (*iv*) all doors and windows, frames and other wooden or metallic framework and shutters shall be kept painted or varnished and the painting or the varnishing shall be carried out at least once in every period of five years; and
   - (*v*) the date on which the process required by clause (*d*) are carried out shall be entered in the prescribed register.
2. If, the view of the nature of the operations carried on (in a factory or class or description of factories or any part of a factory or class or description of factories), it is not possible for the occupier to comply with all or any of the provisions of sub-section (1) the State Government may, by order exempt such factory or class or description of factories (or part) from any of the provisions of that sub-section and specify alternative methods for keeping the factory in a clean state.

(*iii*) *Motor Vehicles Act, 1939 and Control of Noise*

Sections 20, 21J, 41, 68, 68(1), 70, 90, 111A of the Act empowers a State Government to frame rules for the upkeep of motor vehicles and control of noise produced by them in its jurisdiction. Rules framed by the states are mostly concerned with the 'horns' and 'silencers'. Reference here can be made of two such rules. Rule 21 of the Bihar and Orissa Motor Vehicles Rules, 1930 reads:

Horns

1. The driver of a motor vehicles shall not sound the horn for any purpose other than that ensuring safety in traffic and shall not sound it continuously.
2. No cut-out exhaust whistles, sirens, klaxons, electric horn and similar appliances of any description shall be used on any motor vehicle in such areas within a district as may be notified by the District Magistrate in this behalf.

Rule 5.5.

of Delhi Motor Vehicles Rules, 1940 reads:

5.5 Horns

1. Every motor vehicle shall be fitted with a horn or other approved device available for immediate use by the driver of the vehicles and capable of giving audible and sufficient hearing of the approach or position of the vehicles.
2. No matter vehicle shall be fitted with any multitioned horn giving a succession of different tones or with any other sound producing device giving an unduly harsh, shrill, loud or alarming noise.
3. Nothing in sub-rule (2) shall prevent the use of vehicles used as ambulances or for fire fighting or salvage purposes, or on vehicles used by police officers in the course of their duties on other similar vehicles of such sound signals as may be approved by a provincial government.
4. Every transport vehicle shall be fitted with a bulb horn (taxis and motor cycle rickshaws would be, however, provided with either two electric horns with two switches or one electric horn and one bulb born).

Rule 5.6

Silencers

1. Every motor vehicle shall be fitted with a device (hereinafter referred as a silencer) which by means of an expansion chamber or otherwise reducers as far as may be reasonable and practicable the noise that would otherwise be made by an escape of exhaust gases from the engines.
2. Every motor vehicle shall be so constructed or equipped that the exhaust gases from the engines are discharged downwards so as to impinge on the road surface.

Rule 5.9

Every motor vehicle shall be so constructed and maintained as not to cause undue noise when in motion.

The new Motor Vehicles Act, 1988 has come into force from July 1, 1989. This act has brought out the changes as compared to the old Act of 1939 in respect of vehicle fitness etc. From 1.10.89 every motor vehicle shall comply with the following emission standards:

(*i*) Idling emission limit for four-wheeler petrol driven vehicle shall not exceed 3% of the volume.

(*ii*) Idling emission limit for two-wheelers and three-wheelers petrol driven vehicles shall not exceed 4.5% by volume.

(*iii*) Smoke density for all diesel driven vehicles shall be as follows:

Method of Test	Maximum smoke Density		
Absorption Coefficient	Light ml	Bosch units	Heritage
(*a*) Full load at a speed of 60% to 70% of maximum engine rated speed declared by the manufacturer	3.1	5.2	75
(*b*) Free Acceleration	2.3	—	65

(iv) The Bihar Control of the Use and Play of Loudspeakers Act, 1955

Section 3 of the Act provides restrictions against use and play of loudspeakers. It reads:

"No person shall use and play a loudspeaker:

(*a*) within such distance as may be prescribed from a hospital, a building in which there is telephone exchange, or

(*b*) within such distance as may be prescribed from any educational institution, maintained, managed, recognised or controlled by the State Government or University established under any law for the time being in force or a local authority, or admitted to such University or any hostel maintained, managed or recognised by such institution or hostel is in the use of students.

Section 6 of the Act provides that the cognizance of offence under the Act would be on a complaint made by or at the instance of, the person aggrieved by such offence or upon a report in writing made by any police officer.

Similar enactments have also been passed in Rajasthan and Madhya Pradesh.

(v) *Law of Torts and Control of Noise*

Under law of torts, a civil suit can be filed claiming damages for the nuisance. Nuisance as a tort means an unlawful interference with a person's use of enjoyment of land, or some right over, or in connection with it.[14] For filing a suit under law of torts a plaintiff is required to comply with some of the requirements of tort of nuisance. These essentials are:

1. Unreasonable interference

Every interference is not a nuisance. So long as the interference is not unreasonable no action can be brought.

2. Interference with the Use or Enjoyment of Land

There are two forms of causing interference: (*a*) injury to the property itself; or (*b*) injury to comfort or health of occupants of certain property.

Regarding the second aspect of this is essential, i.e., injury to comfort or health, it has been laid down in a number of cases that inconvenience and discomfort from the point of view of a particular plaintiff is not the test of nuisance but the test is how an average man residing in the same area would take it. The plaintiff may be oversensitive. However, in an action for nuisance actual damage is required to be proved.

(*vi*) *The Aircrafts Act 1934 and Control of Noise*

Under section 5 of the Aircrafts Act, 1934 Central Government has power to make rules for manufacture, possession, use, operation, sale, import or export any aircraft and this may cover the regulation of air transport services and the prohibition of the use of aircraft. The Act has many other provisions also but there is no provision for the control of noise.

Thus, in this connection, it is suggested that aerodromes be constructed far away from residential areas of a city in order to protect residence from the noise created by frequent take off and landing.

Taking into consideration the above analysis of sources and controls of noise pollution, it is recommended that an all India legislation on the subject be enacted for effective control of noise pollution.

7. A PLEA FOR A COMPREHENSIVE LAW TO CONTROL NOISE POLLUTION

From the discussion in the earlier pages it becomes obvious that there is no specific legislation for control and prevention of the noise pollution. For control of noise pollution one has to invoke provisions in various different branches of law and regulations. It is also a fact that the available provisions in various different branches of law are inadequate and unscientific. On the other hand, in most of the developed countries specific legislations have been enacted and scientific methods for investigation of noise pollution have been invented.

Thus it becomes an urgent need of the hour in our country to get a comprehensive legislation enacted for the control of the noise pollution. Some specific legislations regarding water and air pollution have already been enacted in our country. These legislations are: The Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981. Similarly, it is high time now for such a legislation to control and prevent the noise pollution also.

8. REVIEW

From the foregoing discussion the conclusion emerges that noise is now regarded as one of the major pollutants of environment. Various scientific studies conducted all over the world prove that excessive noise is a health hazard as it causes hearing loss, mental deficiency, inefficiency, weakness and tension etc.[15] In India, the problem of noise pollution assumes alarming dimensions and dangerous proportions due to rapid industrial development especially in already industrialised urban areas, the mushroom growth of unplanned urban. colonies and uncontrolled noise some traffic.

We also find that the remedies already available in law of torts and law of crimes of control noise pollution are inadequate.[16] Hence, it is suggested that some other remedies based on scientific calculations be added to these branches of law. And this can be done only by making a specific legislation on all India basis to control noise pollution on the basis of scientific investigations and informations.

Noise level should be controlled at its source. Loudspeakers are chiefly responsible for noise pollution. Hence, the loudspeaker machines should be manufactured in such a way that it will not produce noise higher than particular DB level say 50 DB. Similarly, Motor Horns should be produced which will not make noise more than prescribed limit. Motor cars and other transport vehicles should also be manufactured with such engines and bodies so as to control noise upto the desired limit. Industrial laws have no direct provision to control noise except in terms of nuisance in the Factories Act, 1948. Therefore, certain specific provisions to protect the employees from noise pollution must be incorporated in industrial laws. For example, provisions for ear plugs and insulation should be added there.

To sum up, the alarming problem of noise pollution can be controlled suitably by controlling noise at three levels:

(a) Control of noise at the source level;
(b) Substitution of appropriate apparatus; and
(c) Reduction of volume of noise entering the ear.

Thus, there are two instruments which can be appropriate to solve noise pollution problem. First, direct control can be initiated in the form of 'Noise Emission Standards'; second, indirect controls in the form of charges for pollution, education, and awareness programmes.[17] For implementation of this type 'noise abatement strategy', an annual charge based on the noise level emitted by the vehicles engine can be worked out.[18] This will make the users prefer least noisy vehicle, which in turn will induce manufacturers to reduce noise levels to remain competitive in the market.

Moreover, public awareness about the hazards of noise should be fully aroused so that people could use radio, T.V., two-in-one, etc. at such a volume which may not cause nuisance (noise pollution) to the neighbours.[19]

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4. Air Pollution Control Theory of Crawford.

5. See Pritam Bhullar, "Heading Towards Deafness", *Indian Express*, October 13, 1990, p. II; see also "The Noise Menance", *Indian Express*, August 22, 1990, p. 6.
6. R.R. Cambell and J.L. Wade, Society And Environment: The Coming Collision (1972), p. 197.
7. D.K. Dixit, "Noise Pollution", Mirror, Sept. 1984, p. 96.
8. *Hollywood Silver Fox, Farm Ltd.* v. *Emmett* (1936) 2 K.B. 468.
9. Dr. Nowell Jones is a Professor of Psychology at the University of California. See also Bruce L. Welch and Annemarie (ed.), Physiological Effects of Noise (New York, 1970), p. 152.
10. See The Control of the Acoustic Environment: The Pen University Press, Great Britain, 1932.
11. R.S. Ambasht, A Text Book of Plant Ecology, 1980, p. 79.
12. D.C. Varshney, "Noise Pollution: S.O.S. For A Legislation", in Paras Diwan (ed.), Environment Protection, 1987, pp. 390-392.
13. For example, a Chaukidar is perfectly within his right as a Chaukidar to make noise, e.g., Jagto Raho, Jagto Raho (Keep awake keep awake) so as to scare away thieves and bad characters from the house of his master even though by so doing he may hurt the susceptibilities of the high strung and nervous neighbour. Such action of a Chaukidar does not amount to public nuisance. AIR 1926 Oudh 414:27 Cr. L.J. 1020: 30 WN 526 (Ramcharan Ahir).

13a. The H.P. High Court in the Yogender Lal Sharma's held while dealing with the problem of noise caused by the loudspeakers that the District Magistrates must apply their minds before granting permission for the use of loudspeaker and must ensure that the same is not misused. See Yoginder Lal Sharma V.M.C. Shimla, 1983 (II) MCC 133.

14. Winfield on Tort, 7th ed., p. 193.
15. For detail of effects of excessive noise see Laurent Hodges, Environment Pollution (New York, 1970).
16. For further detail see "Noise Pollution" in Paras Diwan (ed.), Environment Protection (1987), pp. 345-430.
17. S. Raja, "Curbing Traffic Noise Pollution", *Indian Express*, January 22, 1991, p. III.
18. The Amending Act. No. 47, 1989 of the Air (Prevention and Control of Pollution) Act, 1981, includes 'Noise' within the ambit of 'Air Pollutant'.
19. Acceptable limits of Noise in different areas are as under:
    (*i*) *Residences*: Rural - 25DB (decibles), Urban - 35DB, Industrial - 40DB.
    (*ii*) *Commercial* : Office 25-40DB, Conferences, 40-50DB.
    (*iii*) *Restaurants*: 40-50DB, Industrial, 40-60 DB.
    (*iv*) *Class rooms*: 30-40DB.
    (*v*) *Hospitals*: 20-35DB.

CHAPTER SIX

Control of Land Pollution and Preservation of Ecological Balance

1. INTRODUCTION

The environment comprises of our air, water and land resources. The most important of these resources for economic growth is land. Productivity of this resource is basic to the economic welfare of our country. All the demands for food, energy and other requirements have to be met by this resource. Hence land, a renewable resource, is the most important endowment of nature.

However, land resource in India is limited. The per capita availability of land has declined from 0.9 hec. in 1951 to 0.5 ha in 1980-81 and 0.4 ha at present which will decline further to 0.36 acre by 2000 A.D. Of the total geographical area of 329 million ha, one estimate[1] places 94 million ha of non-forest cultivable land as degraded. In the Ganga basin alone it is estimated that the erosion is around 6 billion tonnes of soil per annum and the total of the rivers of the entire country could be as high as 15 billion tonnes per annum. The value of this loss of soil if estimated in terms of market equivalence could be over Rs. 10,000 crore annually. The direct impact of this loss is felt by the rural poor whose sustenance and life support depend on the quality of the soil that they eke for their livelihood.

The Citizen's Report (1982) on environmental pollution states about land pollution as under:

(*i*) Every six months, more top soil gets washed away than has been used to build all the brick houses across the country;

(*ii*) In the highly grazed Shivalik hills six cm. of top soil, representing nearly 24000 years of local ecological history often disappears with one monsoon.

(*iii*) Between a quarter to a half of the lands brought under irrigation can go out of cultivation permanently because of soil salinity and water logging.

Relentless pressures of increasing human and cattle population and the excessive demands of unprecedented rates of economic development have been the major causes of the widespread degradation of the land resources. Thus, pressures of population and failure of agricultural productivities to keep pace with it has resulted in taking cultivation to marginal lands and lands on hillsides, which are ecologically very fragile. If, the current rate of population growth and environmental degradation continues in India the country may face a food shortage by the 2030.

There are three types of lands by ownership or management control: government-owned land, privately owned land and common village land. There is no national land use policy that influences or determines the efficient allocation of all types of lands, according to their capability and available technology of production. Forest policies since 1894 have been guidelines for use of (Government owned lands) forests. The present chapter is on the role of government policies in determining the optimal land use in the context of preservation of ecological balance.

Preservation of ecological balance implies conservation and wise management of the life support systems of land, water, flora, fauna and the atmosphere. It involves concurrent and integrated attention to all the components of the biosphere as well as geosphere.

2. DEVELOPMENT OF WASTELAND AND ENVIRONMENTAL PROTECTION

(A) Approaches of Wasteland Development

The key to development of wasteland is preventing soil erosion. The key to preventing soil erosion is to stop cutting down trees and instead expand far greater efforts at planting and nurturing them. In India, deforestation in Himalayas alone contributes to the annual flooding of more than 12 million acres of land. If, forest destruction continues in the next ten years the amount of *arable* land loss will increase by ten per cent, excrabating hunger and endangering the ecosystem.

(i) What is Wasteland?

According to the National Wasteland Development Board, wasteland can be defined as any land which is not put to optimal use. It means that any land which is not being used in accordance with its full capability has to be called a wasteland. The technical task group of experts set up by the Planning Commission has classified wasteland into two broad categories:

(1) Culturable wastelands, and

(2) Unculturable wastelands

Culturable wastelands are those lands whose level of productivity of vegetative cover can be increased with or without inputs. Those lands are: (*a*) gullied and ravine lands, (*b*) surface waterlogged and marshy lands, (*c*) salt affected land (*d*) degraded lands, (*e*) deserts, (*f*) fallows and (g) other lands lying not utilized.

Unculturable waste lands are those on which vegetation cover cannot be developed. Since lands are: (*a*) barren rocky areas, and (*b*) snow covered or glacier area. Hence the term wasteland in India refers to such degraded land which has deteriorated for lack of appropriate water and soil management, but which can be brought under vegetative cover with reasonable effort.

(ii) Estimates of Wastelands in India

So far no detailed land-use survey has been conducted in our country hence there are contradictory accounts available to indicate the extent of wastelands in the country. According to a study[2] there are 94 (million hectares) m.ha. of wasteland in non forest areas, 36 m.ha. of forest land which are degraded and can be termed as wasteland. According to National Wastelands Development Board, 175 million hectares are wastelands. According to the information collected by the society for the 'Promotion of Wasteland Development, New Delhi' there are about 87.7 m.ha. of wasteland. For a statewise account of extent of wasteland in India, see Table 1:

Table 1: Statewise Extent of Wasteland in India

(in m.ha)

State/Union Territories	Non-forest Wasteland	Forest Wasteland	Total
Andhra Pradesh	7.682	3.734	11.416
Assam	0.935	0.795	1.730
Bihar	3.896	1.562	5.458
Gujarat	7.153	0.683	7.836
Haryana	2.401	0.074	2.475
Himachal Pradesh	1.424	0.534	1.958
Jammu & Kashmir	0.531	1.034	1.565
Karnataka	7.122	2.043	9.165
Kerala	1.053	0.226	1.279
Madhya Pradesh	12.947	7.195	20.142
Maharashtra	11.560	2.841	14.401

Manipur	0.014	1.424	1.438
Meghalaya	0.815	1.103	1.918
Nagaland	0.508	0.878	1.386
Orissa	3.157	3.227	6.384
Punjab	18.010	1.933	19.943
Tamil Nadu	3.392	1.009	4.401
Tripura	0.108	0.865	0.973
Uttar Pradesh	6.635	1.426	8.061
West Bengal	2.177	0.359	2.536
Union Territories	0.889	2.715	3.604
Total	93.691	35.889	129.580

(Source : This table is taken from Gautam Dey, F.N. 2 at 498).

This statewise breakup will be useful to correctly ascertain the exact details and the extent under each ownership. Hence, to overcome the present deficiency of wood and avoid indiscriminate exploitation, there is urgent need for effective waste-land management towards the growth of forests.

However, the pressure of population on land is very high in India and is rising further. As a consequence of growing population, the present per capita availability or cultivable land in India is 0.37 hectare as compared to 20.5 hectare in Canada, 1.10 hectare in U.S.A. and 0.20 hectare in China. Thus per capital availability of cultivable land in India is very low.[3]

(iii) Global Estimates of Wastelands

At the global level, some 1,475 million hectares are currently cultivated, out of total cultivable area of 3,200 million hectares. However, inspite of the pressures to increase food production in developing countries, progress is slow, during 1973-1988 the area of cultivated land increased by only 4 per cent, the area of permanent pasture remained virtually unchanged and forest areas declined by 3.5 per cent. The main reason for this lack of progress is poor management of agricultural land. The poor management of agricultural land destroys the very basis of human productivity-the soil. The soil takes thousands of years to form — and a year or two to destroy. More than 25,000 million tonnes of material are removed from farm-land every year, in addition to that inevitably lost to natural erosion. In the U.S.A., 44 per cent of cropland is affected by soil erosion. In the El Salvador, 77% of land is eroded; and 38 per cent of Nepal's fields land has been degraded.[4]

A recent global assessment of land degradation estimates that 15 per cent of the world's land has now been degraded by human activities. Of this 55.7 per cent has been caused by water erosion, 28 per cent by wind erosion. 12.1 per cent by chemical degradation (such as salinization caused by inadequate drained irrigation), and 4.2 per cent by physical interference which results in waterlogged, compacted and subsided land.

The worst affected areas are drylands, which cover 27 per cent of the world's land area. Here land degradation caused by human action is called 'desertification'.[5] In the drylands, desertification affects 47 per cent of rain-fed cropland, 73 per cent of rangeland and 30 per cent of irrigated areas of agricultural land. Recurrent droughts dramatise the problem. The African drought of 1984 to 1985 affected more than 30 million people in 21 countries. Of these, 10 million were forced to move home permanently and became known as environmental refugees.[6] Death, disease, malnutrition and disability are haunting the lives of these people who still suffer from intolerable living conditions.

Thus, each year 20 million tonnes of soil gets eroded the world over, representing a loss of 5-7 million hectare of arable land. In India alone, 6000 million tonnes of soil is washed away,[7] sending valuable cultivable land barren.

(iv) *Causes of Formation of Wastelands*

The causes for the formation of wastelands[8] and the resultant environmental breakdown and the ecological imbalance are many. But the causes of land degradation can be divided between overgrazing (34.5 per cent), deforestation (29.5 per cent), agricultural (28.1 per cent) and over exploitation (7 per cent). The cause of degradation is primarily the non optimal use of land resources coupled with the following other problems:

1. The excessive human and cattle population demands more and more from land-based resources with the result that the lands are put to much strain in the form of over use, leading to its rapid deterioration and degradation.
2. The scientists are of the opinion that the toxic effluents in sewage and industrial waste harm soil and thus cause wastelands.
3. The property of land resources is a reflection of the poverty of rural masses due to which inputs for land development are very less. Thus efforts to improve the environment depend mainly on elimination of poverty and the wasteful habits of the very rich. The world's richest one billion people consume most of the resources and generate much waste, poorest one billion, fighting for survival

have most of the children-almost all condemned to join the ranks of the 630 million defined as very poor.

4. Mining is a destructive though paying activity which creates wastelands. As we scour the earth, digging into it for valuables, both the dug-up area and the area where the material is dumped are so destroyed that they can no longer support any life and thus create wastelands.
5. The developments projects like irrigation and power projects have also caused lots of damages to the land resulting in excessive salinity and alkalinity in the agricultural lands.
6. The mismanagement of forest and other common lands by the Revenue Department and Panchayats in the past are the major causes of degradation of forest lands.
7. The increasing demands for fuel-wood and fodder is bound to cause further degradation unless the demands for fuel wood and fodder is met, land degradation is difficult to be stopped.
8. Excessive use of pesticides also causes wastelands due to pesticides poisonous effects. Pests are also becoming resistant to pesticides. The annual consumption of insecticides in India has gone upto 90,000 tonnes. All varieties of insecticides are poisonous.
9. Soil pollution is also caused due to over use and misuse of fertilizers, extractive crops, hybrid seeds and soil erosion. Soil erosion is further caused by over grazing, gravity, wind and huvial actions.[8a]

(v) *Development of Wastelands : Need For a Holistic Approach*

An integrated approach for coordinated and realistic programme is needed[9] if the dream of protecting eco-system and 'greening' degraded lands has to be translated into reality. The future strategy would have to be broad and comprehensive as well as multi-disciplinary, aiming not only at halting degradation but also increasing productivity on degraded lands. For achieving this, we will have to take following corrective steps:

1. A drastic reduction in the rate of population growth.
2. Restoration of ecological balance by encouraging and promoting natural regeneration and reclothing the area by artificial regeneration with seeding and planting massive trees on wasteland and hill slopes.
3. The generation of hydro-electric power by building dams of medium height.
4. Creating employment opportunities on a sustained basis by en-

gaging rural poor, establishing, maintenance and management of tree based assets, harvesting, processing and trade of forests produce.

5. The recycling of all organic waste materials into the soil and reliance on the biological control of pests.
6. Improving the water-storage position of the tanks and wells by forming ponds, and augmenting the water resources for drinking purposes and for agricultural purposes.
7. The stopping of the burning of cow-dung and its use for the generation of biogas; the utilisation of effluent as compost.
8. Upgrading the land for increased productivity by careful blending of structural and biological measures.
9. The exploitation of solar energy to meet the domestic requirements of fuel.
10. To meet the rural needs by appropriate selection of species of trees and other perenials.
11. The observance of strict austerity in the consumption of petroleum products.
12. To ensure participation by forming village Waste Land Upgradation Committees and forming Cooperatives by consulting the local people in decision-making.

In addition of the above, regional ecological models will have to be prepared for developing the 'degraded-lands' and 'Wastelands'[10] These models should consider the local climate and soil types, geomorphology and geo-hydrology, fuelwood demand and supply, and likewise, fodder demand and supply. There is expertise available in the country for dynamic econological modelling. Government has also become aware of the problems. What is necessary is that the national forest policy, national grazing policy, development of degraded lands and wastelands and soil conservation must also be considered as parts of a single policy which may be called the national forest and fodder development policy. Such a policy should have conscious regard for agricultural development which also needs another look in order to minimise what may be called the ecological boomerang by way of pollution and environmental damage resulting from fertiliser, pesticides and even irrigation.

(*vi*) *Wetlands : Eco-Preservers*

Wetlands occupy an estimated 6 per cent of the world's land surface. Wetlands support their own individual mix of species. There are approximately 30 million species on the earth but only about 1.5 million have every been described. Of these 750,000 are insects, 41,000 are vertebrates and 250,000 are plants; the remainder are invertebrates, fungi and micro-organisms. Most species are found near the equator. Species diversity peaks in tropical forests and coral reefs.

Wetlands include diverse systems as fresh brackish and salt water marshes, inland and coastal swamps, flood plants, more (all peatland types) and shallow water bodies. Man made wetlands include reservoirs, ponds, lagoons, extraction pits and water ways. Natural and artificial wetlands are increasing feature of both developed and developing countries. These are also an epicentre of attraction because of educational, scientific and recreational values.[11]

Wetlands have played a key role in sustaining early pre-historic cultures such as mesolithic occupants of post-glacial lake margins and coasts in Europe. Historically, wetland destruction and alteration has dominated over an alternative view of maintaining them because of prevalence of wetlands concept, association of wetlands with disease, particularly malaria, and lack of financial support for wetland protection, and management. Often regarded as wasteland or as the habitat of pests and disease-carrying insects, wetlands are among the most biologically productive ecosystems in the world. But they are being destroyed in almost every region. If we are to be saved, our planet must be saved. This is the real spirit of environmental protection.

Wetlands provide us with a broad range of benefits, and these benefits are lost as remaining wetlands are destroyed. The major values of wetlands is the high fish production at most sites. Water quality parameters can be altered by passage through a wetland ecosystem. Wetlands also provide a valuable livestock forage resource for individual land owners.

We can no longer afford to squander our nation's natural wealth in wetlands and we should move forward to establish a national policy that protects wetlands and serves to increase the wetland base over wastelands.

3. ENVIRONMENTAL IMPACTS OF RIVER VALLEY PROJECTS AND BIG DAMS

In a developing country like India, where three-fourths of total population are depending on agriculture, the execution of river valley projects is an important element of growth and development startegy.[12] This has been achieved by the process of planned socio-economic development, initiated under Five Year Plans. India is situated in the monsoon Zone and except the northern states, which get water from snow-fed rivers also, all other parts of the country have to depend on the rains for supply of water which is available only for two to three months during July-September. Unless this water is stored in artificially created reservoirs, it cannot be available for use during the whole year.[13] But, at present, India uses only a tenth of the rainfall it receives annually and even after 40 years from now, will be using only a quarter.[14] In view of such a situation, the proper and full utilisation of rain water through river valley projects becomes utmost necessary and occupies an added significance.

India has the rare distinction of having the largest number of valley projects in the world. The 1578 major dams has been built by 1985 at a cost of Rs. 15,026 crore.[15] All these dams cover nearly one per cent of India's total land area.[16] These dams have become a symbol of national development as these are by and large located in backward and tribal areas. Many people living in these areas look at these development projects with very high hopes. These dams do have the potentials of solving most of our economic problems. Eradication of floods, famines, food shortages, unemployment, urban water shortages and the power shortages are all possible with the help of execution of such dams.[17] These projects have both benefits as well as environmental implications.

(A) Ecological Impacts of Big Dams

The river valley projects or big dams have become India's the most controversial environmental issue which has serious implications, particularly in a long term perspective. Very oftenly the environmental impacts of big dams have been neglected, due to several reasons, like lack of sound knowledge about the environmental impact of irrigation projects, lack of tools for evaluation of the costs and benefits etc.[18] The big dams have both upstream and downstream environmental impacts.

(i) Upstream Impacts

The upstream environmental and ecological impacts of big dams are : (1) social erosion; (2) micro climatic changes; (3) loss of forests, flora and fauna; (4) changes in fisheries, especially on spawning grounds; (5) chain effects on catchment area due construction, displacement etc.; (6) landslips, siltation and sedimentation; (7) breeding of vectors in reservoir and increase in related diseases; (8) seismicity; (9) loss of non-forest land; (10) waterlogging around reservoir (11) growth of weeds.

(ii) Downstream Impacts

The downstream environmental impacts of the large dams are: (1) water-logging and salinity; (2) micro-climatic changes; (3) reduced water flow and deposition in river, with related impacts on aquatic ecosystem, flora and fauna; (4) flash floods; (5) salt water ingress at river mouth; (6) changes in coastal ecosystem (e.g. mangroves); (7) loss of land fertility along river; and (8) vector breeding and increase in related diseases.[19]

Since many of these impacts can have long term and irreversible loss of the quality of human and non-human life in the region, and since the consequent loss and the cost of mitigatory measures must be included in any assessment of the viability of a dam, it is, therefore, considered necessary to conduct a thorough environmental impact assessment (EIA) prior to the clearance of the dam. The Department of Environment and Forests, Government of India, has prepared detailed guidelines for this, which every project authority and state Government is supposed to adhere to. It is partly on the basis of the thoroughness of such an EIA that a decision can be made on he desirability and viability of a dam.

(B) The Case Against Big Dams

A majority of India's dams are 'unsafe by present standards', according to a leaked internal World Bank memo, the International Rivers Network.[20] According to the Network, the World's worst-ever dam disaster, in Henan province of China in August, 1975 was caused by failure of two big dams with a combined capacity of 600 million cubic metres of water. Between 86000 and 230,000 people were killed when the dams burst during an exceptionally heavy flood.[21]

(i) Economic Costs

The big dams, despite creating several benefits have not achieved their stated objectives in terms of economic benefits.[22] It is also now an established fact that the big river valley projects are not a positive proposition in India. As per practice a project is sanctioned by the Planning Commission only when the cost benefit ratio is 1:15. But, one of the study has indicated that the cost-benefit ratio in the case of construction of big dams is only 1 : 46.[23] Another important fact is that the extent of under utilisation (25 per cent) is also very high in the case of large dams; whereas in case of minor dams it is only 9.4 per cent.[24] The average cost of providing irrigation facilities to one hectare of land is Rs. 7,224 in case of big dams, against only Rs. 1,754 in case of medium dams.[25]

One of the major objective of executing river valley projects is to control the floods on big rivers. But, experience shows otherwise that faulty construction and misjudging of water holding capacity and annual precipitations have led to several accidents, causing a great loss of life and property. For example, between 1875 and 1975, 40 dams have collapsed, causing a great loss to life and property. Thus, the big dams cause economic costs.

(ii) Social Costs

The big river valley projects also cause several social costs of heavy magnitudes. The greatest social cost of the big dams is the widespread displacement of local people from their ancestral habitat and loss of their traditional occupations. It is estimated that the number of people affected directly or indirectly by all big irrigation projects in India over the past 45 years can be as high as 20 millions.[26]

The Hirakund dam, one of the largest dam, executed in fifties, has displaced more than 20,000 people residing in 249 villages.[27] The Srisailam project, completed in 1983 has displaced over one lakh people.[28] The Narmada Sagar river valley project is expected to displace about a million people.[29] The Bhakra Nangal dam which was constructed during 1950s had resettled only 33 per cent of displaced families till 1978.[30] All these figures try to prove the magnitude of displacement caused by the big river valley projects.

The displacement of economically weaker sections of the society and tribals, is the most serious aspect of displacement from the point of view of uprooting them from their natural surroundings. Absence of these surroundings in the new resettlement colonies, shatters their social, cultural and physical links. They have developed apathy for their traditional songs, dances, ornaments etc. In this process of displacement and resettlement, the people have lost many important traits.

The rehabilitation measures adopted under various projects are very inappropriate and inadequate. For example, the number of families displaced between first two plans due to development projects in Bihar State was 46,644, while it was 20, 927 in Orissa and 15,352 in West Bengal. However, only 25 per cent of these families were rehabilitated so far.[31]

(iii) Environmental Costs

Teddy Goldsmith and Nicholas Hillyard, the co-authors of two volumes on large dams, have reached the conclusion after studying four hundred dams all over the world. As these dams are a threat to civilization, no less than nuclear weapons, an appeal has been made to the international funding agencies not to finance such dangerous ventures.[32] In India, too the big river valley projects have today become the most controversial environmental issue which has serious implications of a long-term perspective.[33] Some of the serious environmental costs of big dams are: depletion of forest resources, siltation and sedimentation, soil erosion, water logging, pollution, wild life destruction, etc. Generally the environmental effects of big river valley projects are neglected, because of several reasons, such as lack of sound knowledge about the environmental impacts of big irrigation projects, lack of tools for evaluating the cost and benefits etc.[34]

Thousands of hectares of forest have been cleared for executing valley projects. In addition to the dam construction area, the forest is also cleared for residential accommodation, office building, storing material, laying roads etc. Thus, the construction of a big dam have multiple effect on denundation of forest resources. The Narmada Sagar project will alone submerge 3.5 lakh hectares of best forest comprising of rich teak and bamboo forests. The Tehri Dam will submerge 1000 hectares of forest, which will affect 427 species of plants, according to a survey carried out by the Botanical Survey of India.[35] Construction of dams under these projects will also take a heavy toll of wild animals, such as deer, giat squirrel, tiger, panther, bison, sambhar, cheetah, blue bull, sloth bears, black buck, wild deer and wild buffaloes.[36]

Actually, it is very difficult to calculate the total loss due to submergence of forests. Forest loss is grossly undervalued, the recurring loss in terms of timber and fuel wood yield per year and the costs of degradation of environment are not taken into account. The cost benefit analysis takes into account only the presently tangible economic values, such as firewood, timber and minor forest products. They totally ignore the intangible ecological values, like soil conservation, water replenishment, climatic stabilisation, air purification, wildlife shelter, etc. According to the Forest Research Institute, Dehradun, the estimates of the intangible value of forest of Narmada project amounts to Rs. 14.7 lakh per tree in 50 years.[37] The environmental cost of loss of forest in the case of Narmada Sagar project would be as high as Rs. 30,293 crore.[38]

All these large scale deforestations have caused several serious ecological damages. Trees too with large leaves provide protection to soil from wind, sun and heavy rain. The role of trees, particularly of their roots on preventing soil erosion is a known fact. It is a well established fact that tree leaves recharge the atmosphere with life giving oxygen by consuming carbon dioxide and through the process of transpiration transmit moisture to the atmosphere. It is estimated that one hectare of woodland consumes 37 tonnes of carbon dioxide and gives out two tonnes of oxygen per year.[38]

The big river valley projects do cause water logging, which leads to salinity and in turn reduces the fertility capacity of the land. The National Commission on Agriculture has estimated that about six million hectares of land has been seriously affected by water logging.[39]

Siltation is another major environmental cost of big river projects. It is at present estimated that annual rate of sedimentation in India is 8.51 hectare m/100 sq kms.

Water and wind erosion inflicts 150 million ha of our geographical area. According to one estimate, at least 58.08 m ha of arable and 6.31 m ha of forest land are yielding more than the permissible limits of 5.0 t/ha/yr of sediments. It is also evident from the sedimentation rates observed in the valley projects given below:

Sedimentation deposits in some reservoirs

Reservoir	Catchment area (km²)	Annual area of silting (tonnes/ha)	
		Assumed	Observed
Bhakra	56876	6.43	9.21
Pong	12500	4.29	17.30
Hirakund	82652	3.78	5.37
Tungabhadra	25832	6.43	9.81
Ram	2997	6.43	27.28

(Abrol, I.P. and Dhruva Narayana (1990) Technologies for Waste Land Development, Published by ICAR).

This results in reduction of both the capacity of the dam to hold back flood waters and its irrigation potentials.[40] It has been estimated that the process of siltation has reduced the water holding capacity of dams by 1.5 to 2.0 per cent per annum. This, in turn, has reduced the economic life of the dams.[41] In this regard, it is suggested that before approving the environmental clearance of all big river valley projects, some of the issues like proposed rehabilitation measures, water logging problems in the command area, drainage, health hazards like water born diseases, effects on flora and fauna, etc. should be considered thoroughly.

(C) The Alternative To Big Dams : A Plea For Smaller Dams And Pre-detailed Study

In the recent past, there has been a lot of public excitement and controversy over three big projects which have brought out the inter-link between development and environment protection. These projects are: The Tehri Dam project, the Sardar Sarovar project and the Narayan Sarover sanctuary in Gujarat.

The Tehri Dam project protesting against which the well-known environmentalist Sunderlal Bahuguna staked his life by going for a hunger strike, a fast unto death, and the government agreed to a fresh review exercise of the project itself. The second, which is earlier in time sequence than the Tehri Dam project, involved the ousting of thousands of Adivasis from the Narmada basin so that the Sardar Sarovar project could be pushed through. Here also the intervention at the grassroots level by Medha Patkar roused the Narmada Bachao Andolan and forced the government to undertake a review whose recommendations are yet to be implemented. The third is the Narayan Sarovar sanctuary in Gujarat which has suddenly been sliced off to nearly half its original size from 769.79 sq.km. to only 444.23 sq.km., to make room for cement plants.

The common issue that dominates all the three is basically the question of saving the environment for the flora and fauna that abound in the region. The Tehri Dam has two aspects of danger. One is that the area in which the massive dam on the river Bhagirathi is due to come up, is known to be seismically unstable-it is earthquake prone. Secondly, the project will destroy large forests tracts along the river and this deforestation will endanger the river itself apart from spreading large-scale erosion of the river banks.[43]

Thus, we have reached a point when we have to seriously consider what weight we would like to give to the entire question of environment. All over the country, our all the great rivers and innumerable waterways have been so badly polluted by industrial effluents that they are fast turning out to be the carriers of vicious diseases; in fact, they will in near future be a direct threat to our community life. Whenever such questions are raised, the convenient retort has been that the protection of environment will fetch no bread for any one, whereas the development programme is a must for our existence. This is a wrongly posed issue between development and environment. What needs to be stressed is the interlinking between development and environment. To the great extent, this has been achieved in many of the developed countries, but in Europe the laws and rules governing industrial activity include as their essential component, strict adherence to the injunctions on industrial waste and their disposal. No such system prevails in our country, despite the fact that it is still feasible to enforce this effectively here. Getting a clearance from the Ministry of Environment has become virtually a formality rather than an effective check for the protection of the ecosystem.

Thus, it may be stated that if a dam is needed for the prosperity of a region, then its height should be fixed from techno-economic consideration. Substitution of one large dam by number of small dams cannot be justified unless detailed study has been done.

What is immediately needed is a nationwide churning-up debate at all levels from the Panchayat to Parliament, involving all the sections concerned of the citizenry, from government officials to political parties, to social activist and academics and the media-to get a clear view of the inter-relationship between development and environment which will set the ground rules for this organic relationship between the needs of developmental programmes and the urgency of protecting our imperilled ecosystem. Today the need has shifted to the question of sustainable development; with which will come the related question of adopting appropriate technology.

Thus, the important measures related to implementation of river valley projects in future are: Firstly, the execution of a number of major river valley projects should be reduced progressively over the years and instead small dams may be encouraged because they can be effectively managed and will not cause much destruction of environment and displacement of people from their habitat and livelihood. Secondly, effective rehabilitation measures should be executed for settling the displaced persons. Thirdly, the environmental clearance of all river valley projects should be made compulsory before approving the project. Before approving the environmental clearance, the issues like proposed rehabilitation measures, water logging problems in the command area, drainage, health hazards like water born diseases, effects on flora and fauna, etc. should be considered thoroughly.

4. ENVIRONMENTAL IMPACTS OF DEFORESTATION: NEED FOR ENVIRONMENTAL UPGRADATION

Tropical forests help function as 'carbon sinks'. They absorb carbon dioxide from the atmosphere and store carbon. Tropical forests, with a rapidly growing plant biomass, have proven particularly efficient in this process in early successional stages. When forests are burnt, they release this stored carbon back into the atmosphere, accelerating the buildup of carbon dioxide, a greenhouse gas that contributes to global warming.[46]

The rising concentration of carbondioxide over the past century has alarmed scientists and policymakers, particularly those in industrialized countries where fossil fuel burning, intensive agriculture, and CFC production are disproportionately responsible for the increased concentration of greenhouse gases in the atmosphere. World scientists and policy makers have been always in the forefront of calling for an end to the destruction of tropical forests. Unfortunately, World politicions some times view deforestation only in the context of global warming, a relationship that is often oversimplified. Global climatic change is just one of a myriad of deforestation-related issues, but it is the one that has attracted most attention. As an ecological and socio-economic process, tropical deforestation currently affects the lives of tens of millions of rural poor in the Third World who do not have the luxury of speculating about long-term climatic fluctuations.

Millions of hectares of Third World closed forests are now being cleared for other uses each year. Accelerated conversion of tropical forests is occurring because of several interlocking socioeconomic and political factors; inequitable land distribution, entrenched rural poverty and rapidly growing populations which push landless and nearlandless peasants on to forest lands that often contain infertile soils; government subsidized expansion into forest regions by plantations growing export crops, timber companies, and cattle ranches; and government sponsored population relocation to frontier regions. Less than 0.1% of forest regions are actively managed for sustainable development.

Overriding economic concern have generally pushed aside environmental concern in most Third Word countries. Moreover, even when regulations are on the books they are rarely enforced because of well connected special-interest groups and inadequate government enforcement capabilities. Government policies have generally supported rapid exploitation of forest regions that were perceived to be under-utilized national assets.[47] The economic development and resource exploitation policies of these countries are being criticized by environmentalists and, more importantly, by lending institutions who demand that they adopt more ecologically sound management of their forests.

(A) Consequences of Deforestation

In India, the total geographical forest area has been reduced considerably. Indian forests have come down 22 per cent to 10 per cent, whereas, the minimum that is required to sustain a balanced eco-system is 33 per cent. On the contrary an estimated 1.3 million hectares of depletion of forest land is carried in every year if this is allowed to continue, India may turn into a desert in the next century. Noticing this gravity of forest denuation several enactments were made in India. From 1865 to 1987 Forest Bill, several amendments and enactments were made and implemented. Yet the forest denuation is very fast becoming reality and grown into unlimited dimentions.[48]

The aim of forest conservation is their rational use as well as the satisfaction of the needs of mankind. It is simply a question of drawing attention to the necessity of maintaining under woodland not only the areas necessary to supply industries, but also for the stability of the environment in areas where ecological and economic studies have shown that transformation into agricultural or pastural land is not profitable in the long term.

The forest ecosystems have protective, regulative and productive functions at ecosystem level. These functions can acquire utility value for man in five fields: energy exchange, water vapour exchanges; fixing and release of carbon dioxide; release, dilution and absorption of aerosols, gases and solutes; and the production of goods and cultural services. The energy exchange complex can be divided into radiation and energy balance. The increase or reduction of water vaporisation will influence the thermal radiation of the atmosphere and thermal of the planet. The same is true for carbon dioxide and aerosol production.

The forest itself exhibits a great diversity of architectural structure and of species and chemical composition. The high degree of diversity is possibly a major condition for the sustained functioning of the forest ecosystem. Forest structure is closely related to the energy, water and nutrient regime. The structure in terms of phytomass distribution, and leaf crown geometry, is probably essential for safeguarding sustained productivity and preventing the development of excessive stress. At present large areas of forests are being destroyed. Invariably, structural diversity and complexity will be reduced and modification will occur in the processes of energy and matter exchange and circulation in the boundary layers between atmosphere, vegetation and soil. This will unbalance the functioning of the ecosystem and the effects will be felt at the regional and finally at the global scale.

Burning the forest and of waste and debris releases carbon dioxide and smoke into the atmosphere and subsequent cultivation causes soil destruction, erosion, water pollution, peak floods, and the silting on a massive scale. At the present rate of forest destruction, all accessible forests will have disappeared by the end of this century and dry matter will have ben burnt or decomposed using a large amount of oxygen and releasing more carbon dioxide into the atmosphere. 10-20 per cent of the released CO_2 will eventually be fixed again by the substitute vegetation or buffered in the oceans (40%), but 40% will remain in the atmosphere and increase its CO_2 by 10-15%. The consequences are yet unpredictable, but climatic changes are certain. Plants may react to the increased CO_2 content of the atmosphere by a greater rate of photosynthesis, but the climatic changes associated with the increase of CO_2 and vegetation burning may counteract or reduced plant production. Aerosol particles from the tropical regions as polluting facts in the atmosphere originate above all from savanna burning and shifting cultivation. Small amounts are released by the exploitation of forest, burning of crop wastes, and by the release of hydrocarbons, pollen grains or spores.[48a]

(*i*) *Water Storage in Plants*

Transpiration by plants results in the release of moisture, the red wood trees (Sequoi sp) of California in U.S.A. give about 3000 litres of water as moisture in 24 hours. In Indian Banian tree is supposed to give out 400 litres of water as moisture. Lahiri (1975) has worked out that in desert areas even grasses loose from 179 to 543 mm. of water per day Ranganathan (1980) has estimated that water storage by plants resulting thereby would amount to a staggering cost of 40,000 million.

One acre of barren land looses 30 tons of top soil. The thin layer of top soil on this earth is our source of food, production. All this soil is washed away in monsoon and if changed, unprecedented floods cause havoc and ultimately by silting at the riverine estuaries, the breeding of a large number of marine life is badly jeopardised. The loss of soil nutrients, damages agriculture and this is estimated at 3000 million rupees. The floods in India in 1978 (autumn) devastated the lands, and area in West Bengal and Uttar Pradesh resulting in 2000 deaths and a loss of crops valued at 6000 million rupees.

These had their origin in the tree denuded slopes of Nepal and North India. The stripping of land of trees and forests in India and Pakistan and later turning it to sheep and goat for grazing and even cutting leaves to feed them, has resulted in the last 2000 years in an arid area called Thar desert, which even today is advancing at the rate of nearly 2 miles per year.

Nearly 56,000 sq. miles have been converted to an area of shifting sand which only 20 centuries back was a deep forest inhabited by the Indian Rhinoceros. Ganguly (1980) has taken into account the denudation of tree cover for fuel, timber, paper industry, mining, hydel project agriculture and concluded that at this rate, there is 10-15 years left for complete barrenning of the country.

(ii) Forest Wealth-fuel

The pattern of domestic fuel consumption indicates that the poor man's energy is only fuel, which on a percentage basis amounts to fire-wood 63% kerosene 14%, dung cake 10%, charcoal 5%, coal 4%, coke and electricity 3% and gas is only 1%. The value of wood removed from forests as fuel amounts to 250 million cubic metres per year and this must be at a cost of Rs. 25,000 million, while the value of timber removed runs to about 10,000 million rupees per year. The price tag on forests (even at a distress sale) amounts to 4,50,000 million for their value to produce timber and fuel wood only (Ranganathan 1980).

The National Commission on agriculture, estimated the demand for firewood by 2005 A.D. to be 375 million cubic meters. In Maharashtra it would be 25 cm. while the present day production, here is only 1.4 m cm. In our country wood as domestic fuel in urban areas amounts to 62% and in rural areas amounts to 80%. The net result is that we are using nearly 250 million cubic metres of wood as fuel per year from our forests. This is more than 20 times the volume of timber extracted. If massive replantation of forest is not taking place now, India will loose all her forests in about 20 years. This will lead to a drop in Agriculture production, rainfall precipitation, wild life depletion and ultimately formation of deserts as in Rajasthan.

(B) Conservation of Nature for Human Welfare

Modern man engrossed by his own problems, increasingly isolated from nature in his cities, has only recenlty began to rediscover an ancient truth: he represents just one strand on an infinitely complex web of living things that share this earth. Further, man has become aware that every living thing, himself included, affects every other living thing in an intricate interaction with land, air and water.[49]

The most obvious relationship in this form is that between plants and animals. Nature so desired that plants support the existence of animals on this earth and that animals support the plants. Man is only a very small part of the animal kingdom. But he is evolved as with a massive brain power. Thus, man has created for himself special laws for governance of his society in the field of economy, sociology and politics.

It is the interaction of these man made laws with natural law by which man should be governed, that has caused in recent times the problems of pollution and environmental bio-degradation. The causes for this damage are found in the field of destruction of the finite resources of the earth, air and water pollution, bad conservation, over population, and ecocidal warfare. Web are in this country most concerned with the problem of total denudation of our forests and vegetable life.

We will confine and discuss here the balance of nature and the benefits given to us by plants.

In the end we would like to set out a scheme to reforest India to enable nature to keep a natural balance which will benefit animal life, including man for the welfare of all living things on this earth.

(*i*) *Life Dependent on Plantmass*

Prof. Frank B. Goilly of the Institute of Ecology at the University of Georgia has estimated that all plants on this earth produce about 143.8 billion metric tons of biomass each year. Of these 88.8 billion tons are produced by terrestrial and 55 billion tons by the plankton in the oceans. However since herbivores thrive on vegetation alone, and since they take only 1/10th of plant biomass, we have in this world, 1.438 billion metric tons of herbivores mass available each year for use by carnivores and omnivores.

The plant mass is unequally distributed on this planet. Oceans and deserts produce little of this organic energy. On the contrary, there is over-production on the areas of estuaries, some ocean shores, fertile islands, wet tropics, continental grasslands, forests, croplands and shallow lakes. In one year wet tropic forests produce 50 to 80 metric tons of biomass out of only 2½ acres. The green areas are limited. All the organic energy indirectly derived from the sun comes from only 25% of the earth's surface and much from less than 15% of the land area.

It should therefore be noted that life depends on this slender thread of 15% on this globe and a major portion of this is forests. Plants use only 10-20% of their energy production for their activity, while the remaining 80-90% of it is utilised for the production of the vegetable mass. As the leaves fall and plants die, 90% of this vegetation is decomposed by food chains, and made available to life or converted long ago into fossil fuels.

Herbivores eat about 10% of the world production of greenery. They convert only 10% of their food etc. and make available the energy to secondary consumers like the carnivores. Thus only 1% of the plant materia is converted to flesh. Scavengers and parasites like earthworms, fungi and bacteria feed on dead animals tissues and release nitrogen.

Carbon and phosphorus, (bound in the animal tissue) is released into the atmosphere. Thus energy and elements are used and reused. Each is tied to its wonderous chain. Man seldom realises as to what supports him and how much he is a part of nature.

Plants apart from giving us Oxygen to purify our blood absorb all the carbon dioxide that we exale or that is liberated by burning fuel in industry and transportation.

Meterologists are beginning to express concern about the impact on atmospheric carbon-bio-oxide levels. Conservationists are worried about the threat to plant and animal species adopted to forest habitats, because of indiscriminate cutting of trees and forests. The ratio of 20 plants to one animal for a proper balance of nature has long been out-stripped with the forests being destroyed.

Burning of fossil fuels is adding some additional amounts of carbon-dioxide to the atmosphere, which if not properly absorbed would pose a serious danger when reacting with certain frequencies of radiation, this gas would raise the atmospheric temperatures. This would have green house effect and may in due course affect the glaciers and ice-caps; causing floods (Moore 1979).

(C) How to Hasten Afforestation

The VIIth Plan document rightly envisages bringing 110 million hectares of land under forest cover by the year 2000 as against the existing 35-37 million hectares. However, even though the perspective is right, the target of only 10 million hectares during the 7th Plan is not consistent with this perspective. As rightly emphasized by the Prime Minister, it is necessary to bring at least 5m hectares of land under forest cover every year. An immediate decision should be taken to cover at least 20m. hectares of land during the remaining period of the 7th Plan.

It will be possible to generate the additional funds required for all revised target initially by properly co-ordinating various existing programmes like Guarantee Employment, Afforestation and Soil Conservation Programmes. If more funds are required for the revised targets they should be made available on a priority basis.[50]

To bring additional 70-75 m. hecs of land under forests within next 13-14 years, is a great challenge. It is necessary for this purpose to prepare a time bound Master Plan for afforestation and watershed management for the whole of the country. Consistent with the Master Plan, statewise and district wise plans should be prepared and plan funds made available for the implementation of the said programmes. Coordination between various existing employment and other programmes shall not only help in bringing down the costs but will ensure achievement of the desired results.

The country has been spending hundreds of crores of rupees to meet the consequences of droughts and floods year after year. Instead the best approach is to make an all out effort to prevent and control the droughts and floods through permanent measures. Initially, the cost may appear to be huge but in the long run, the country will get adequate returns. Besides, this is essential to regain the environmental balance and to preserve the ecosystem.

The present approach of the government will lead to centralisation of authority. The Central government has formed the National Wasteland Development Board to bring 5 m. hectares of land under forests every year. The Board has miserably failed. It has not been able to bring even 15 thousand hectares under green cover so far. In a huge country like India, a centralised approach is neither workable nor advisable. The afforestation programmes should be executed through the state government, Zila parishads and mainly through the gram panchayats and the people. The NWDB should operate only as a catalytic agent to sponsor and coordinate the activities in the country. It is beyond the capacity of NWDB to clear hundreds of schemes and monitor them from its office at New Delhi.

The best course would be to incorporate the afforestation programmes in an integrated manner in the Annual and Five Year Plans of the respective states, along with necessary guidelines and incentives. Gram panchayat should be nodal point for implementation. A Watershed Management and Afforestation Plan should be prepared for every village or cluster of villages, and yearly afforestation consistent with such Plans should be undertaken accordingly, the present zilla parishad and gram panchayat Acts should be changed so that their elected representatives should be involved in implementing the Water-shed Management and Afforestation Programmes.

Implementation of afforestation programmes cannot be left only to the district forest officers or forest departments. Afforestation should be an integrated part of rural development and has to be coordinated with other programmes. The NGOs, Educational Institutes, Students Co-ops, and others could play a vital role in this regard. Today, rural women are the worst sufferers, as most of their time is consumed in fetching water and collecting fuel. Awareness among the women folk and the small children could be the best guarantee for the protection of our forests. All this calls for co-ordinated efforts at the district level and below. A co-ordinated efforts at the district level and below. A co-ordination committee should be formed at the district level under the chairmanship of the Collector to implement these programmes.

Nearly 22 per cent of our total geographical area i.e. 75 m. hectares are with the forest ministries, out of which hardly 10 per cent are under good forest cover. The remaining 40 m. hectares are either denuded or barren. It will indeed be a tremendous task to bring these lands under forest cover during the next 12-13 years. Due to various constraints, it may not be possible for the government to make available all the necessary funds required for the same. The existing machinery and the staff are too inadequate.

Under the circumstances the lands which could be brought under forest cover by the government during the next 12-13 years should be reserved for the departments and the rest of the government forest lands should be made available, only for afforestation within a prescribed period, to other agencies, such as local gram panchayats, co-ops of the local. Adivasis and farmers, educational institutions, social organisations.

Even if all 75 m. hectares of government lands are brought under forest cover, it is necessary to bring additional 35 m. hectares of private land under forests or forest like trees. Along with persuasive methods, all landowners and farmers both in rural and urban areas should be put under a legal obligation to bring at least 10 per cent of their lands under forests or forest like horticultural trees. Those who plant trees for industrial purpose (Production Forestry) should be allowed to cut a fixed proportion of these trees after certain years. This will provide the raw forest produce to the dependent industries and will also provide lucrative incentives to the private parties to plant more and more trees.

Small, marginal and poor farmers planting trees on their barren fields or wastelands, should be treated as employees under the Guarantee Employment or Rural Employment Programme and necessary long term finance at concessional rates of interest should be made available to such farmers. Instead of asking such poor farmers to do work on far away projects, why not carry forest like productive and purposeful schemes to their own fields? Such an imaginative approach will certainly help in bringing about 35-40 m. hectares of private lands under green cover by the year 2000.

State governments, union territories, zilla parishads, railways and the concerned ministries of the Central Government should be asked to plant trees on both sides of roads, canals and railway tracks all over the country. Gram panchayats and farmers having lands by the road-side, railway tracks or canals should be fully involved in this activity. The fruits and incomes from such trees should be given to the adjacent farmers or gram panchayats on a long term basis under Tree Patta schemes. They should feel as if they are the masters of these trees. Farmers should be persuaded to bring bunds under forest cover by planting straight growing or small horticulture, trees, which could be pruned and kept to size, so that they do not cause any harm to the crops. It has been well established that existence of forests and trees help in getting better agricultural produce. This message has to reach the farmers who do not give up traditional methods easily.

Military establishments and public sector undertakings in the country possess huge open or barren lands. Though some of them have taken up afforestation activity, many are yet to follow suit. They should be asked to immediately plant trees on open lands and to bring them under tree cover within the next five years. It may be necessary to provide some funds to these establishments for this purpose.

It is not possible to protect the forests or undertake new afforestation without making proper arrangements, for fuel and fodder. It is, therefore, important to make provision for fodder. It is, therefore, important to make provision for fodder and fuel through fast growing species and to adopt an integrated approach for fuel, fodder and forests — the Three Fs. Simultaneously all efforts should be made to generate alternate energy through non-conventional methods like biogas, biomass, solar and wind energy and to introduce energy saving devices like smokeless chullas.

Having regard to the natural and soil conditions and availability of water or rains, it is, necessary to prescribe proper species for concerned areas and to establish the nurseries accordingly. In view of the costs involved for transportation and convenience, there should be at least one main nursery for every Tehsil (Taluq). Consistent with the programme, requisite number of plants should be made available from such nurseries and the preparations of plants for the next monsoon season should commence from October-November of the previous year.

(D) The Forest (Conservation) Act, 1980

The direction by the Central Government that every case of location of any activity in forest land must be referred to it under the Forest (Conservation) Act, 1980 has led to a great deal of resentment against the Forest Department. This is particularly pronounced in the Garhwal region, where foresters admit that the requirement of obtaining prior permission of the Central Government has virtually made them inactive.

If a water wheel which drives a chakki breaks down, it cannot be replaced without the Central Government's permission because it is located on a river which is in reserve forest land. Schools cannot be built, village roads cannot be repaired for want of material which cannot be quarried, stones not removed for building village houses and not even water courses for irrigation constructed because prior permission is needed. In Barwaha in Madhya Pradesh, which is known for its pottery, clay cannot be excavated because it is located on forest land. A kattha still cannot be set up even temporarily because forest land is involved. A village pond cannot be dug without the Central Government's permission. Throughout the length and breadth of India where even notionally forest land exists, all activity has come to a halt at the level of village, the individual farmer and the tribal.

(*i*) *Salient Features of the Act*

This was hardly the objective for which the Forest (Conservation) Act was enacted. Alarmed at the massive deforestation occurring in the country, Parliament enacted the Act 1980, effective from 25th October, 1980. The Act has only five sections, with Section 5 being the repeal and savings clause. In short order the Act prohibits the use, without the approval of the Central Government, of any forest land for a non-forest purpose. All powers under the Act vest in the Central Government and there is not even an enabling clause permitting delegation of powers to any subordinate authority. Every case of diversion of forest land to any other purpose tree felling, removal of forest cover for canals, dams, power lines, roads, etc. mining operations in forest areas and every other non-forest activity is required to be submitted to the Central Government for approval.

The object of the Act is laudable because it provides for the conservation of forests. It was obviously born out of the realisation that if the State Governments are left to administer the Indian Forest Act there would soon be no forest worth the name as deforestation is done at State level under political pressure, It was felt that the Central Government is less amenable to pressure and that it would be able to take an objective view of every case relating to deforestation. Elaborate instructions were issued under the Act directing new proposals for diversion of forest land were to be submitted. Exercises had to be done in detailing topography, enumerating forest cover, suggesting where and how compensatory plantation would be done, etc. Theoretically, every decision of the Government of India would then flow from the logic of the given situation in which the bias would always be in favour of the forests. On Paper this sounds good.

How has the Act actually been enforced? As already stated, at the village level it has caused great hardship to people and stopped even legitimate activity which does not really disturb the forest. For example, the U.P. Jal Nigam can no longer lay its pipelines through forest land because permission from the Central Government is needed even for this. In a State such as Madhya Pradesh, where one-third of the entire land area is either recorded as forest or is under forest cover, all rural development works, especially in tribal areas, have suffered a serious set-back because of the operation of the Act.

The Act has succeeded only in causing inconvenience to people without any commensurate benefits to forests. But when it comes to preservation of forests on a large scale, the Government has been less successful. In 1984 the Government of India pointed out 78 cases of violation by the State Government in Madhya Pradesh alone, with over 4,000 hectares of land being occupied by the Irrigation Department without obtaining prior clearance. When Mr. Madhav Singh Solanki was the Chief Minister of Gujarat, he ordered commencement of an irrigation work in his own constituency in violation of the Act. Only recently, at the level of the Prime Minister, the Sardar Sarovar and Narmada Sagar projects on the river Narmada were given clearance under the Act, despite the fact that over 50,000 hectares of excellent forest would come under the axe for the two projects alone. The pressure on the remaining forests in the Narmada and Tapti basins may see the clearance of another 1.5 lakh hectares at least within the next ten years.

(*ii*) *Shortcomings of the Act*

The Forest (Conservation) Act has not stood in the way of the Tehri Dam, Koel-Karo Project in Bihar or the massive mining operations taking place to feed the aluminium plants at Damanjori and Korba. The whole of Sidhi district is being reduced to a barren waste because of mining of coal for the power stations at Singrauli. It is not the Act which stopped the Silent Valley project — it was the resistance of the local people. The story may be repeated at the Bodhghat Project too. A single threat of agitation by the people of Gujarat brought abject surrender from the

Government of India in the case of the projects on the Narmada River. Where was the Act then? One fears for the future of the only biosphere reserve in Madhya Pradesh, the Kanger Valley, because the Cement Corporation of India wants to mine lime-stone there.

Actually the Act is very badly drafted and is wholly meaningless in its present form. For one thing, it does not distinguish between the scale of operations of, say, quarrying by the village potter and quarrying by the National Mineral Development Corporation. It is easy to stop the potter from removing the earth because he is too small to resist the State Government. It is impossible to resist NMDC because too many vested interests are involved. At another level the Government also does not distinguish between a case for permission in which a large project is involved and another in which a very small project is in question. The same authority located in Delhi, will clear the case of a village school in a forest village as also the case of a dam on a large river. This does not make sense.

There are lakhs of little works which go on in a village, most of which do not have even a marginal effect on the forests. Why should such cases go to the Central Government? Why cannot guidelines be prescribed and the local Divisional Forest Officer authorised to take a decision? The harm that one single large project does lays waste the whole countryside. The harm that a village pond causes often does not result in the cutting of even one tree. Unfortunately those in authority in the Government of India refuse to accept this reality.

(iii) *Forest Land Not Defined*

In drafting, the law is so poor that it should never have been admitted on the Statute Book. For example, Section 2(2) states that except with the prior approval of the Central Government no order may be made directing 'that any forest land or any portion thereof may be used for any non-forest purposes.' The Act does not define 'forest land'. It is not only under the Indian Forest Act that land is defined as forest land. The Madhya Pradesh Revenue Code, for example, defines revenue forests. Does this Act cover such land? No doubt the Ministry of Environment, Forests and Wildlife has issued instructions in this behalf from time to time, but instructions neither have the force of law nor can they replace a legal definition.

Under Section 3, the Central Government can appoint a Committee to advise on the grant of approval under the Act. The words 'a committee' do not permit an interpretation to be made that more than one committee can be set up. Nor is there any provision for any sub-committee of the main committee. Can one committee cover the whole of India? But most damaging of all, the Act has no penal provisions, which means that there is nothing which can be done if Government, an official or a private individual violates the Act. All that would happen is that land notified as a reserve forest will continue under such notification, regardless of its status in terms of vegetation or use.

There is need to scrap the Forest (Conservation) Act of 1980. This does not mean that forests should be scrapped. We need a more comprehensive law which does the following things:[51]

Suggestions

(1) First land must be clearly defined;

(2) Reforestation must also be clearly defined. Under the Act no permission is needed for reforestation of land. Despie this the Government of India insists that its clearance be obtained before making land available even to a local body for afforestation;

(3) Village works, local works and works at a scale in which the forest land to be disturbed is less than 10 hectares should also be defined. The D.F.O. should have the authority to clear every such a case. The State Government must be brought into the picture and delegated powers to clear all cases where the extent of deforestation is less than 100 hectares. In a federal system no level of Government can be considered more or less responsible than any other level of Government.

(4) The Act must provide for very clear guidelines for the environmental appraisal of projects and assessment of the benefits which accrue from the project as against the environmental damage that it does. The guidelines should be a part of the main Act so that the type of arbitrary decisions which now flow from the Central Government can be avoided in future; and

(5) There must be a positive provision in the Act which offers incentive for a afforestation. A negative approach will not help. There must be a system of rewarding individuals, institutions and local authorities that either help in preserving forests or participate in improving them.

For example, the Act can provide for specific incentive in cash or kind for those individuals or bodies which fight forest fires, undertake protection of afforestation from grazing and illicit felling or help in afforestation and improvement. Once this is done there will be active participation of the people in conserving the forests. Today there is nothing but hatred.

5. REVIEW

Wildlife (Protection) Act 1972 and the Forest Act 1927 together establish five main categories of protected areas in India: national parks, sanctuaries, reserved forests, protected forests and village forests.[52] However, the categories clearly have not emerged out of a comprehensive national scheme for conservation, utilisation and development of natural and biological resources.

An important component of a unified national protected areas system is the regeneration of degraded lands outside the protected areas. The prerequirement for regeneration is an effective set of land regulations for preventing further degradation of valuable ecosystems.[53] Regeneration of degraded lands outside the protected areas reduces the pressure on protected areas for people's needs by creating alternative sources for meeting their necessities.

A vast area of land is being degraded in India. About 6000 million tonnes of top soil is being lost per annum through water erosion and this amount to, in terms of major nutrients alone, an annul loss of Rs. 700 crores.[54] Between 100 to 150 million hectares of India's land area is rapidly turning barren and 1 million hectares of croplands and grazing are badly affected.[55]

Of the 75 million hectares classified as forest lands, no more than about 12 per cent of the country's land surface is actually under adequate tree cover as against the target of 33 per cent prescribed by the National Forest Policy of 1952.[56]

Factors responsible for such a dismal position are numerous, such as faulty agricultural and irrigation practices, construction of big dams, industrial activities, mining operations, urban growth, population growth and others. A serious search for the root cause for degradation of lands points to the absence of a proper land-use planning and management.

The fundamental principle of land management policy is a classification of the available land into different categories based on the use to which such land can be put and the national socio-economic priorities. Pursuant to such a policy laws concerning irrigation, mining, agriculture, industries and urban zoning have to restrict the various activities to specified land areas. Simultaneously specific programmes to take positive steps for improvement of the remaining lands, such as compensatory afforestation, and silvyculture have to be designed and implemented. The various land laws in India both at the national and state levels, uniformly fail to incorporate the aforesaid principles in them.[57] The lands are arbitrarily classified into different categories without regard to their condition and those categories are frequently altered.

The Government of India and many state governments have evolved a national programme for the regeneration of forest cover outside the demarcated reserved forests, called 'social forestry'.[58] Its primary aim is to develop local biomass resources for satisfaction of the local people's biomass needs by large-scale tree planting on common lands and open government lands by village communities for satisfaction of their own requirements.[59] Conceptually well designed and intended, the social forestry scheme has been utilised to further encourage commercial plantation for exploitation consumption of natural sources.[60] An organizational initiative by the government of India in Wasteland development was establishment of the National Wastelands Development Board (NWDB) in 1985. Its original mandate envisaged a radical alteration in forest management, whereby degradated land areas currently under the control of the forest and revenue departments would be made available to individuals, communities and organisations for afforestation. In the absence of enabling legislation, the board's programmes of fuel and fodder plantation have remained largely unrealised.[61]

We, today, eat more than we produce. In 1987 world reserves of grain were sufficient for 101 days. In 1989 there was enough grain stored for 54 days. Grain production in Africa, now well below basic level of 400 pounds per capita per year is set to fall further. For every inch of topsoil lost, yield falls by 6 per cent, 24 billion tonnes lost each year. More than one million acres of cultivable land is lost each year as houses are being built.

We destroy faster than we record species. By 2000 a tenth of all species will be lost. By 2020 a third of all the species facing the greatest risk will be those inhabiting the tropical rainforests. About 20,000 plants have edible parts, yet only 3000 have been discovered or used. Charles Darwin grew 82 plants from the seeds taken from the feather of a single bird. Of the last 1,500 sea-cows many are killed by collision with boats. We are growing in population at an alarming rate. Bombay's population will rise 3 lakh per year.

In the name of growth, fossil fuels have been burnt, abundant chemicals harmful to the atmosphere have proliferated, poisons have been dumped on land and in rivers and oceans, and natural resources, such as, forests have been ravaged and exploited to the point of extinction. As a result, we are confronted with the phenomenon of global warming, caused by accumulation of gases, such as, carbondioxide, and the depletion of ozone layer. The earth is enveloped by a blanket of gases that trap some of the solar radiation that reflects off the earth's surface and is redirected towards space. These gases, denominated greenhouse gases, include water vapour, carbon dioxide, chlorofluorocarbons, methane, nitrous oxides and certain trace gases.[62]

Therefore, we will have to develop appropriate technology and public policies for achieving the desired rate of growth without lessening the long term production potential of soil and water.

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CHAPTER SEVEN

Environmental Protection And Emerging Trends in Judicial Responses

1. INTRODUCTION

In our quest for rapid industrial growth over the years, the environmental quality has come to be subordinated to development goals. We are now gradually heading towards irreversible environmental damage, due to widespread land degradation, water pollution, air pollution, mushrooming growth of slums and population explosion.

The existing administrative and institutional framework is too feeble and ineffective to handle the challenge of environmental protection, which threatens our very survival. Hence, there is a need to have a new environmental ethos to meet the challenge. This is precisely where the role of an activist judiciary comes in. With the Supreme Court of India taking the lead, the centre of gravity of justice has now shifted from traditional individual locus standi to the community orientation of public interest litigation.[1]

2. COURTS' POWER TO PROTECT ENVIRONMENT

The many more important issues of environmental policy may be resolved through the courts. There are more than 200 Central or state enactments which have a direct or indirect bearing on environmental protection. Articles 48A and 51A(*g*) of the Indian Constitution also make it imperative for the State as well as every citizen of India to do everything to protect and improve the environment including forests, lakes, rivers and wildlife of the country. In recent years, there have also been enacted important environmental legislation covering specifically such areas as water pollution,[2] air pollution,[3] wild-life,[4] forests[5] and environmental protection.[6]

Although the Environment Act, 1986 appears to reduce the dependence of State boards on the courts for enforcement by allowing them to close down offending units,[7] but it also contains an important provision regarding filing of cases.[8] Whereas the earlier acts reserve the ability to file the cases against non-complying factories to government entities only.[9] However, the Environment Act, 1986 allows citizens to file such suits as well. For filing a suit, the citizen must notify the State Board of the problem and give it 60 days to file its own suit or notify the citizen that it will not file a suit.[10]

One impediment to citizens' suits has been the basis upon which such suits might be brought prevented until the enactment of the Environment Act of 1986 from filing suit directly to the courts to control pollution under the air and water acts, citizens successfully brought suit in the Supreme Court under Section 133 of the Criminal Procedure Code, which prohibits nuisances.[11] The Court has also accepted the petitions in environmental cases brought under Articles 32 and 226 of the Constitution and based on Article 21, which guarantees right to life and personal liberty, arguing that the right to live in pollution-free environment is part of the right to life.[12] This is so because litigants and lawyers prefer the relative inexpense, speed, flexibility and the direct access to the nation's highest courts, that the writ procedure offers.

3. RULE OF STANDING AND PUBLIC INTEREST LITIGATION IN ENVIRONMENTAL CASES

The higher judiciary of India has struggled over the last decade to bring law into the service of the poor and oppressed. Under the banner of Public Interest Litigation (PIL) and the enforcement of fundamental rights under the Constitution, the higher courts have tried to rebalance the distribution of legal resources, increase access to justice for the disadvantaged and imbue formal legal guarantees with substantive and positive content.

A number of distinctive characteristics of PIL can be identified, each of which is novel and in some cases contrary to the traditional legalist understanding of the judicial function. Its distinctive characteristics include:

(*i*) liberalization of the rules of standing;
(*ii*) procedural flexibility;
(*iii*) creative and activist interpretation of legal and fundamental rights;
(*iv*) remedial flexibility and ongoing judicial participation and supervision.

(A) Rule of Standing And Accessibility to Courts

The traditional understanding of litigation requires that the participants have some real interest to promote in order that 'truth' will effectively be revealed through adversarial proceedings. In individualist capitalist cultures, the notion of a 'real interest' historically emphasized property and other financial interests.[13]

Anticipating later innovations, the Indian Supreme Court held in 1976 that : "Where a wrong against community interest is done, 'no locus standi' will not always be a plea to nonsuit an interested public body chasing the wrong doer in court ... Locus standi has a larger ambit in current legal semantics than the accepted, individualist jurisprudence of old".[14] Since that time the Indian approach to PIL has extended the rules of standing to the point that at present there seems to be no real obstacle to the public interest litigation. PIL has been initiated by individuals on behalf of other individuals and groups, by academics, journalists and by many social action organizations. As rightly explained by Krishna Iyer J. in *Mumbai Kangar Sabha* v *Abdulbhai*.[16]

> Test litigations, representative actions, pro bono publico and like broadened forms of legal proceedings are in keeping with the current accent on justice to the common man and a necessary disincentive to those who wish to bypass the real issues on the merits by suspect reliance on peripheral, procedural shortcomings ... Public interest is promoted by a spacious construction of locus standi in our socio-economic circumstances and conceptual latitudinarianism permits taking liberties with individualization of the right to invoke the higher courts where the remedy is shared by a considerable number, particularly when they are weaker.

In S.P. Gupta v. Union of India,[17] Bhagwati C.J. (as he then was) was even more explicit:

> Where a legal wrong or a legal injury is caused to a person or to a determinate class of persons ... and such a person or determinate class of persons is by reason of poverty, helplessness or disability or socially or economically disadvantaged position, unable to approach the court for relief, any member of the public can maintain an application for an appropriate direction ...

The Indian judiciary has also shown a willingness to alter the rules of the procedure where necessary, Actions may be commenced not only by way of formal petition, but also by way of letters addressed to the court or a judge who may choose to treat it as a petition. There are reports of actions begun by postcard, and even of one judge converting a letter to the editor in a newspaper into a PIL writ.[18] Right to legal aid has been established as a fundamental right in criminal cases[19] and in others the courts will often waive fees, award costs and provide all other forms of litigation assistance to public interest advocates.[20] The court frequently appoints commissions of enquiry or social-legal committees to investigate and collect facts and thus relieving the petitioner of the financial burden of proof.[21]

— All such procedural innovations by the court have been contested by defendants on the plea that they violate traditional canons of procedure. The use of socio-legal commissions, for example, allows evidence to be collected ex parte; immune from cross examination. To such objections the Supreme Court has responded: "The constitution-makers deliberately did not lay down any particular forms of proceedings for enforcement of fundamental rights nor did they stipulate that such proceedings should conform to any rigid pattern or straight-jacket formula."[22] Thus, without some way of rebalancing the resources of litigants, fundamental rights will remain but a "teasing illusion" for the poor and disadvantaged:

> We have therefore, to abandon the laissez faire approach in the judicial process ... and forge new tools, devise new methods and adopt new strategies for the purpose of making fundamental rights meaningful for the large masses of people.[23]

Originally PIL aimed at combatting inhumane prison conditions[24] and the horrors of bonded labour,[25] and now it has established the right to a speedy trial,[26] the right to legal aid,[27] the right to a livelihood,[28] the right to human dignity,[29] a right against pollution[30] and a right to be protected from industrial hazards.[31]

4. TRENDS IN JUDICIAL ACTIVISM TO PROTECT ENVIRONMENT

Environmental policy making, like other controversial areas of public policy, is a never-ending process and the courts will always be intimately involved in this process. The increase in environmental awareness since 1980s has triggered a spurt in the environmental cases reaching the courts. "It is emphatically, the province and duty of the judiciary, to say what the law is."[32] Most of these actions in environmental cases are brought under Article 32 and 226 of the Indian Constitution, since the litigants and the lawyers prefer the direct access to the nation's highest courts, that the writ procedure provides. The environmental petitions are generally based on the plea of violation of fundamental rights. It was not until 1978 that the Supreme Court breathed substantive life into Article 21 by subjecting state action interfering with life or liberty to a test of reasonableness;

requiring not only that the procedures be authorised by law, but that they are "right, just and fair".[33] This transformation paved the way for a substantive reinterpretation of constitutional and legal guarantees and positive judicial intervention.

(A) The Right to a Wholesome Environment

Encouraged thus by an atmosphere of freedom and articulation, the Supreme Court rejected the "bureaucratic tradition" of mechanical and rule-bound adjudication[34] and entered one of its most creative periods.[35] Most significantly, the Court fortified and expanded the Fundamental Rights enshrined in Part III of Constitution. In the process, the right to a wholesome environment (although not explicitly mentioned in Part III) was drawn within the expanding boundaries of the fundamental right to life and personal liberty guaranteed in Article 21.[36]

The Supreme Court expanded the scope of Article 21 in two ways. First, it required laws affecting personal liberty to also pass the tests of Articles 14 and 19 of the Constitution thereby ensuring that the procedure depriving a person of his personal liberty be reasonable, fair and just.[37] Second, the Court recognized unarticulated rights that are implied by Article 21.[38] It is by this second method that the Supreme Court interpreted the right to life and personal liberty to include the right to a wholesome environment.[39]

In Dehradun Quarrying Case,[40] for the first time, the Supreme Court held that the fundamental right to a wholesome environment is a part of the fundamental right to life in Article 21 of the Constitution. In July, 1983, the representatives of the Rural Litigation and Entitlement Kendra, Dehradun wrote to the Supreme Court alleging that illegal lime-stone mining in the Mussoorie-Dehradun region was devastating the fragile eco-systems in the area. On 14th July the Court directed the registry to treat the letter as a writ petition under Article 32 of the Constitution with notice to the Government of Uttar Pradesh and the Collector of Dehradun. Over the years the litigation grew complex. The Court issued its final judgment in this case in August, 1988 and it had heard lengthy arguments from central and state governments, government agencies and mine lessees; appointed several expert committees; and passed several comprehensive, interim orders. None of these orders, however, articulate the fundamental rights infringed. Since the exercise of jurisdiction under Article 32 presupposes the violation of a fundamental right. Therefore, it becomes necessary to reasonably hold that enjoyment of right to life under Article 21 of the Constitution embraces the protection and preservation of a wholesome environment without which life cannot be enjoyed.

This view is also supported by Justice Singh's concluding observations justifying the closure of polluting tanneries in the Ganga Pollution case:[41] "We are conscious that closure of tanneries may bring unemployment, loss of revenue, but life, health and ecology have greater importance to the people."[42]

Many High Courts have also explicitly recognised right to a wholesome environment as a dimension of right to life guaranteed in Article 21. In this context, the observations of Andhra Pradesh High Court in *T. Damodhar Rao* v. *S.O. Municipal Corporation, Hyderabad*[13] while considering a writ petition to enjoin the Life Insurance Corporation and the Income Tax Department from building residential houses in a recreational zone, are worth noting here:

> It would be reasonable to hold that the enjoyment of life and its attainment and fulfillment guaranteed by Article 21 of the Constitution embraces the protection and preservation of nature's gifts without (which) life cannot be enjoyed. There can be no reason why practice of violent extinguishment of life alone should be regarded as violative of Article 21 of the Constitution. The slow poisoning by the polluted atmosphere caused by environmental pollution and spoilation should also be regarded as amounting to violation of Article 21 of the Constitution. In *R.L. & E. Kendra, Dehradun* v. *State of U.P.*, AIR 1985 S.C. 652, the Supreme Court has entertained environmental complaints alleging that the operations of limestone quarries in the Himalayan range of Mussoorie resulted in the degradation of the environment affecting the ecological balance ... The Supeme Court in an application under Article 32 has ordered the closure of some of these quarries on the ground that their operations were upsetting ecological balance. Although Article 21 is not referred to in these judgements of the Supreme Court, those judgements can only be understood on the basis that the Supreme Court entertained those environmental complaints under Article 32 of the Constitution as involving violation of Article 21's right to life.

It, therefore, becomes the legitimate duty of Courts, as the enforcing organs of constitutional objectives to forbid all actions of the State and the citizen from upsetting the environmental balance. In this case the very purpose of preparing and publishing the development plan is to maintain such an environmental balance. The object of reserving certain areas as a recreational zone would be utterly defeated if private owners of the land in that area are permitted to

> build residential houses. It must, therefore, be held that the attempt of the Life Insurance Corporation of India and the Income-Tax Department to build houses in this area is contrary to law and also contrary to Article 21 of the Constitution.[44]

The High Courts of Himachal Pradesh,[45] Rajasthan[46] and Kerala[47] too, have held that environmental degradation violates the fundamental right to life. However, not clearly articulated by the Supreme Court, the right to a wholesome environment seems to be widely accepted by the higher judiciary is implied in Article 21 of the Constitution.[48]

(B) Right of Equality And Government Actions with an Environmental Impact

Apart from Article 21 of the Constitution, the right to equality guaranteed in Article 14 may also be infringed by government decisions that have direct impact on environment.[49] Article 14, inter alia, strikes at arbitrariness "because an action that is arbitrary, must necessarily involve a negation of equality",[50]

Thus, various environmental groups frequently resort to Article 14 to quash "arbitrary" municipal permissions for constructions that are contrary to development regulations[51] Further, Article 14 may also be invoked to challenge government sanctions for mining and other activities with high "environmental impact",[52] where the permissions are "arbitrarily" granted without an adequate consideration of environmental impact.[53] In the environmental context an important question arises here, namely, it is possible to derive a right to intergenerational equity from Articles 14 and 21 of the Indian Constitution? The main feature of the theory of intergenerational equity is the right of each generation of human beings to benefit from the cultural and natural inheritance from past generations as well as the obligation to preserve such heritage for future generations, Intergenerational equity thus requires conserving of the diversity and quality of biological resources and of renewable resources such as forests, water and air.[54]

(C) Freedom To Trade vis-a-vis Environmental Protection

As and when environmental protection laws are made more stringent and their enforcement becomes more vigorous, industrial challenge to agency action is likely to increase more and more. Courts then will have to balance environmental interests with the fundamental right to carry on any occupation, trade or business guaranteed in Article 19(1)(*g*).[55] Take for example, effluent discharge standards prescribed by the Pollution Control

Boards may be challenged under Article 19 for being excessive. Whether the Courts will adopt a pro-environment stance in resolving such future disputes remains to be seen yet. It is also a fact that industry's money power is able to secure the services of better lawyers than those who typically represent environmental agencies and government departments. In such cases, judicial compassion for environmental issues might help balance the scales of justice. Indeed, society's concern for environmental issues and the vigour with which the government promotes environmental protection in both word and deed, might have a greater bearing on the outcome of future industry — enforcement agency than the narrow questions of law involved.[55a] Recently, Rajasthan High Court with a pro-environmental stance has held[55b] that the stocking of fodder on a plot in residential colony does constitute pollution of atmosphere and health hazard for the residents of whole of the colony. Further the court has rightly emphasised that public health cannot be allowed to suffer on account of personal business of any individual.

(D) The Supreme Court: Holistic Environmental Perception

In India before 1984, the Indian judiciary had made a very little contribution in the area of environmental protection. The Bhopal disaster demonstrated the utter helplessness of Indian legal system in providing adequate compensation to the victims numbering 2500 dead and over two lakh people affected. The sign-post approach of judiciary towards promotion and protection of environment and ecology is reflected in Vardhichand,[56] Ogla Tellis[57] and Shriram Fertiliser[58] where the Court adjudicated in holistic fashion. In Vardhichand, the Supreme Court merely adopted holistic and moonshine approach without conceding the right of the citizens to seek damages in tort for nuisance nor to prosecute civic bodies under Section 133 Criminal Procedure Code for pollution control. In Ogla Tellis, the Court was primarily concerned with the right to livelihood of the slum and pavement dwellers. In Shriram Fertiliser, the Court did not think it proper to treat private business organisations as State under Article 12 of the Constitution and thereby placed them beyond the purview of fundamental rights ignoring the claims of ordinary gas victims in regard to right to life under Article 21 of the Constitution.[59]

In Sachidanand Pandey[60] case, wherein the land belonging to Calcutta Zoological Garden, opposite to the garden for the construction of a five star hotel by Taj Group of Hotel for promoting tourism was in dispute involving environmental factors. The Supreme Court adopted a soft approach defeating the cause of environmental factors. In the name of promoting tourism and development, the Court permitted the construction of the five star hotel. Similarly, in the name of economic progress, the Supreme Court allowed the acquisition of forest lands[61] inhabited by Adivasi and backward people for the construction of super thermal plant by National Thermal Power Corporation (NTPC) in total disregard and without reference to national environmental policy, national forest policy and the Forest Conservation Act, 1980.

(E) New Affirmative Approach of Judiciary

However, it is only during late 1987 that the higher judiciary has started to play a vigorous role in preventing environmental degradation. The Supreme Court in *M.C. Mehta* v. *Union of India*,[62] entertained a petition moved by a public-spirited lawyer, and ordered the closure of thirty tanneries of Kanpur which were releasing untreated effluents into the river Ganges. The court observed that the financial capacity of the tanneries was irrelevant while requiring them to establish primary treatment plants. It recognised that the closure of the tanneries might cause unemployment, but held "life, health and ecology have greater importance to the people". In Modi Industries Ltd.,[63] it adopted a strong posture against dumping of industrial waste and effluents into 15 wide canal harming flora, fauna and health of peasants in the surrounding area. Similarly, in *M.K. Sharma* v. *Bharat Electric Employees Union*[64] also, the court adopted an affirmative approach and directed the Bharat Electronic Company to comply with strictly the safety rules and other safety measures to save the employees from the ill-effects of X-ray radiation. Since X-ray radiation affects the "life and liberty" of employees guaranteed to them under Article 21 of the Constitution. These judgments thus can be said to be milestone in the growth of realistic environmental jurisprudence.

(F) The Supreme Court : Departure From Affirmative Approach

The Supreme Court judgment on harmful drugs in *Vincent Panikurlangara* v. *Union of India*[65] marks a clear departure from the affirmative stance of the court in recent years. The judgment, written by Justice Ranganath Mishra, virtually declares that where government policy and expertise are involved, the court would not interfere, though the issues may be of vital importance to the public.

Circulation of banned drugs in the market was the theme of the writ petition in this case filed by the Public Interest Law Service Society of Cochin. According to it, between 400 and 500, banned drugs with different brand names are still available with chemists in the market. A subcommittee of the Drug Consultative Committee had in 1980 recommended a ban on these fixed dose combinations. Its report was approved by the Ministry of Health. The Central Drugs Controller had also issued directions to state authorities to enforce the ban. But, due to slackness in enforcement, the drugs continue to be freely available in the market.[66]

Since the availability of harmful drugs affects the "life and liberty" of citizens guaranteed to them under Article 21 of the Constitution, the petition sought a ban on the import, manufacture, sale and distribution of such drugs and cancellation of licences authorising such activities.

The court's ruling in this case, in essence, was that "it is not for the court to lay down the drug policy of the government". It asserted that the state is "concerned and anxious" to improve the general health conditions of the public, and Parliament has in recent past enhanced penalties to eliminate injurious drugs. The people should, therefore, pin their hope and trust on the government. Thus the Supreme Court in the present case refused to interfere though the issue involved is sufficiently important and the stake of the entire nation is high.

Unlike in this case, the Supreme Court in recent past intervened in matters which are highly technical and affect government policy. Some of the instances are, mining in the Doon Valley,[67] poisonous gas leaks.[68]

The result of this judgment is that the drug firms will continue to have a field day to create health hazards by producing banned drugs. There are more pharmaceutical firms (8,000) than primary health centres (6,000), and more drug formulations than health posts in our country. According to voluntary organisations, four out of five drugs manufactured and marketed are totally unwanted and add to health pollution. But, for the drug companies it will now be business as usual.

(G) Pollution-free Water and Air is a Fundamental Right

In a far reaching judgement in *Subhash Kumar* v. *State of Bihar*,[69] the Supreme Court declared that access to pollution-free water and air is a fundamental right of citizens. The Supreme Court has held that the right to live is a fundamental right under Article 21 of the Constitution and it includes the right to enjoyment of pollution-free water and air for full enjoyment of life. It any thing endangers or impairs that quality of life in derogation of the laws, a citizen has the right to have recourse to Article 32 of the Constitution for removing the pollution of water or air which may be detrimental to the quality of life.[70]

Such a petition for the prevention of pollution is maintainable at the instance of affected persons or even by a group of social workers or journalists. But recourse to such a proceeding should be taken by persons genuinely interested in the protection of society on behalf of the community. Public interest litigation cannot be invoked by a person or a body of persons to satisfy his or its personal grudge and emnity.[71]

The petition was filed by one Subhash Kumar for the issue of a writ directing the director of collieries, West Bokaro Collieries at Ghatotant, Hazaribagh, and the Tata Iron and Steel Company to stop them from the discharge of slurry or sludge from their washeries into the Bokaro river. The petition was by way of public interest litigation for preventing the pollution of the Bokaro river water from the sludge or slurry. The petitioner had stated that Parliament had enacted the Water (Prevention and Control of Pollution) Act for the prevention and control of water pollution and restoration of wholesome water. It had also established a board for the prevention and control of water pollution.

The petitioner further contended that Tata Iron and Steel carried on mining in Jamshedpur. Its mines and collieries had two coal washeries. These discharged sludge or slurry into the Bokaro river which got deposited in the bed of the river and also on agricultural land. Further the slurry got mixed in the Bokaro river and was carried to distant places polluting the river water and thus making it unfit for either drinking purposes or for irrigation. This posed a risk to the health of the people living in the surrounding areas.

The snag was that the petitioner was an interested party. He had been purchasing slurry from the respondents for several years. With the passage of time he wanted more and more slurry. He had obtained a licence for coal trading and had tried to put pressure through various sources on Tata Iron and Steel. He had removed the company's slurry in an unauthorised manner for which a criminal case was pending. He had also initiated several proceedings before the High Court of Patna under Article 226 for permitting him to collect slurry from the rayti land. These petitions had been dismissed on the ground of existence of dispute relating to the title of the land. The petitioner had also filed a number of other cases.

The Supreme Court has found that since the respondent company had prevented the petitioner from collecting slurry from his land and had also refused to sell any additional quantity of slurry to him he entertained a grudge, had taken recourse to several proceedings. In fact, there was intrinsic evidence in the petition itself that the primary purpose of filing the petition was not to serve any public interest but self-interest.

The court also found that there was no substance in the petitioner's allegation that the water of the river Bokaro was being polluted by the discharge of slurry into it from the washeries. On the other hand, the State Pollution Control Board had taken effective steps to check the pollution.

The judgement only confirms what the court has held in earlier cases, that only genuine persons not having a personal interest or bias may file public interest litigation. But the expansion of the fundamental rights to include pollution-free water and air is a major gain for the citizens and hopefully would be further expanded by the court in an appropriate case.

Lastly, the significance of the judgement lies in the fact that the remedy against polluting units could be available regardless of whether the units are in the public or the private sector. This is possible since Article 21 gives the right of life to persons, unlike several other fundamental rights which are available only against the State.

(H) Right to Pollution-free Environment Versus Right to Development : Balancing Role of Judiciary

A Scientists' Club in Rome declared in 1970 that :

> "If the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years." [72] Similarly, the Founex Report, the result of an international meeting held in Switzerland two years prior to the Stockholm Conference, concluded:
>
> > If by some miracle all these persons were to be brought up to the standard of living now enjoyed by the people of the United States .... (the extraction of resources to achieve this desirable goal would deplete the earth's resources). There extraction would virtually deplete the earth of all high-grade mineral resources and would necessitate our living of the leanest of the earth substances: the waters of sea and the ordinary rock.[73]

In anticipating the relationship between the "environmental protection" and the "development", the conference clearly recognised that the earth's resources are being depleted not only by the increased use of available resources, but also by avoidable pollution. It has been predicted that the rapid growth of ocean pollution will put an end to most forms of life within the next fifty years.[74] It has also been predicted that this destruction of ocean life could have graver consequences in that the earth's supply of oxyzen might be reduced, for the reason that a high percentage of oxyzen is produced by phytoplankton.[75]

Thus, today the challenge before the Indian courts is to achieve development without damaging the quality of environment. The right to environment and right to development are both recognized as fundamental rights by the Supreme Court. The question whether right to development is a fundamental right under Article 21, arose in *State of H.P.* v. *Umed Sharma*.[76] Some Harijan residents of Baladi and Bhuko tehsil of Shimla wrote a letter to the Chief Justice of the High Court of Himachal Pradesh, stating that the government of Himachal Pradesh had begun construction of the Channa Hatti Bhuko road but had stopped further construction at village Gharog in collusion with the residents of the village. It was held that the entire State of Himachal Pradesh is in the hilly region of India and without workable roads no communication is possible. Every person is entitled to life as enjoined under Article 21 of the Constitution. The facts of the case read in conjunction with Article 19(1)(*d*), stating that every person has a right to move freely throughout the territory of India and the right under Article 21 not only embraces physical existence of life but also the quality of life. For the residents of the hilly area access to road is access to life itself.[77]

Thus the problem before our country from the point of view of sustainable development, i.e., conversion of natural resources into material goods which improve human health, welfare and comfort without depleting or damaging them over a foreseeable period of time, is how do we calculate, in the appraisal of every project or policy, the drain and cost of natural resources, and yet adopt a technology that is resource-effective and time-effective. A strategy for conserving or resource-effective use of non-renewable natural resources is the imperative demand of modern times. Whereas, minimum sustainable development must not endanger the natural system that supports life on earth, constant technological efforts are demanded for resource-effective production, so that sacrifice of one eco-system is counter-balanced or compensated by recreating another system.

As early as in 1980, in Municipal Council, *Ratlam* v. *Vardhichand*[78] Justice V.R. Krishna Iyer planted for the first time the germ of the idea that the right to environment was a basic human right. He actually correlated environment with development, when he enjoined the government officials to be conscious of the environment, while planning development. This was the beginning for a harmony between development and environment by the courts. This idea was fully blossomed in *T. Damodar Rao* v. *S.O. Municipal Corporation*[79] when Justice A.P. Chaudhary of

A.P. High Court held that ... the enjoyment of life and its attainment and fulfilment guaranteed by Article 21 of the Constitution embraces the protection and preservation of nature's gifts which cannot be enjoyed without life .... The slow poisoning by the polluted atmosphere caused by the environmental pollution and spoilation should also be regarded as violation of Article 21 of the Constitution.[80]

Most of the cases which involve the questions of environment vis-a-vis the requirement of development are public interest litigation. Today in a series of Doon Valley mining cases and M.C. Mehta cases, the Supreme Court has exhibited a new awareness and consciousness wherever the question of environment versus development is posed.[81]

Relating to the issue of environment versus development, three significant principles emerge out of a series of litigation in Rural Litigation and Entitlement Kendra v. State of U.P.[82] spanning nearly six years:

(*i*) Development should be sustainable development planned after keeping in view the environmental consequences.[83]

(*ii*) The litigations which involve questions relating to environment and development should not be taken in an adversial manner but the State must act as a protecting and balancing agent in the conflict.[84]

(*iii*) Every technicality in its procedural law is not available as a defence when a matter of grave environmental concern is for consideration before the Court.[85]

In the Rural Litigation and Entitlement Kendra (also known as Doon Valley) case, the Supreme Court delivered the first order in 1985 and the case was finally decided in 1988, in between a series of interim orders were delivered. Ultimately the mining operations were ordered to be stopped completely in the final judgement in 1988.

It is not only in the field of mining but also in the field of pollutions resulting from lethal emissions and discharge of deadly effluents of industries, the Supreme Court has left its indelible print.

In *M.C. Mehta* v. *Union of India*[86] there was leakage of oleum gas from one of the units of Sriram Mills in New Delhi in December 1985. This leakage affected several persons and caused the death of one advocate practising in the Tis Hazari Court. A writ petition was filed by way of public interest litigation by Mr. M.C. Mehta under Article 32 in the Supreme Court, inter alia, for determining liability of larger enterprises engaged in the manufacture of hazardous products, and the basis of fixing damages. The Supreme Court heard the petition and made interim orders. This case is also popularly known as the Delhi Oleum Gas Leak case, came before thrice and three orders were passed till December 1986.[87]

In Mehta No. 1,[88] issue to be determined was the restarting of the caustic chlorine plant of the company.[89] Since the issue involved complex technical points, various expert committees were appointed which gave conflicting opinions. This led the court to appoint an expert committee with specific directions. Ultimately, the company was permitted temporarily to restart its plant with certain stringent conditions.[90] Mehta No.2,[91] sought certain clarifications from the court on the conditions laid down in Mehta No. 1, which is slightly modified. Thus Mehta No. 1 decided the issue of restarting the plant and Mehta No. 2 modified the conditions laid down in the previous order. The other issues were postponed for a subsequent decision. They came up for consideration in Mehta No. 3. The basis issues taken up in this case included:

(*i*) the scope of article 32,
(*ii*) the ambit of article 12, and
(*iii*) the liability of an enterprise engaged in a hazardous activity and quantum of compensation.

In Mehta No. 3 the petitioner had not asked for compensation in his original writ petition. Hence the respondent raised the preliminary objection to this effect. However, the court did not accept the objection. Rather, it observed that, to meet the ends of justice, the "hyper-technical approach" cannot be adopted. Since the applications for compensation were for the enforcement of a fundamental right to life, the court declared that it would "look at the substance and not the form". It also spelt out the compass of article 32 by holding that this article does not merely confer power on it to issue writs and directions but it also empowers it "to forge new remedies and fashion new strategies.[92] it reiterated that under article 32 it has power to award compensation in appropriate cases.[93]

In this case the claims of compensation were based on the infringement of article 21 by a private enterprise. Thus the court the exposition in *Som Prakash* v. *Union of India* as its guideline and observed that even private corporations should also have constitutional conscience and should not be permitted to flourish as imperia in imperie.[94] But such a private enterprise, may, of course, be deemed to be an authority under article 12 for the purposes of fundamental rights, will not be "state" in relation to all of its functions.[95]

In Mehta No. 3, for liability of hazardous or inherently dangerous industries, Chief Justice Bhagwati, ventured "to evolve a new principle of liability ... to deal with an unusual situation which has arisen and which is likely to arise in future on account of hazardous or inherently dangerous industries which are concomitant to an industrial economy ....[96] Besides, the court also evolved the doctrine of "magnitude-cum-capacity" in awarding compensation. Further it has utilised the deterrent theory of punishment in granting relief in such cases. According to Mehta No. 3, the following principles of liability are evolved :

(*i*) An enterprise, engaged in a hazardous or inherently dangerous industry and posing a potential threat to the health and safety of workers and persons residing in the surrounding areas, "owes an absolute and non-delegable duty to the community to ensure that no harm results to any one on account of hazardous or inherently dangerous nature of the activity which it has undertaken".

(*ii*) If the enterprise carrying on such activity is working for its profit, it must indemnify all who suffer by such activity.

(*iii*) The enterprise is under an obligation to conduct such hazardous and inherently dangerous activity with the highest standards of safety. If, as a result, any harm ensues, it is absolutely liable to compensate the victims. Reasonable care and absence of negligence will not mitigate the liability.

(*iv*) The enterprise shall be strictly liable for causing the harm as "a part of the social cost" for carrying on hazardous or inherently dangerous activity.

(*v*) The quantum of compensation in such cases will depend upon "the magnitude and capacity of the enterprise because such compensation must have a deterrent effect".[97]

The question of water pollution, especially that of the river Ganga came up before the Supreme Court in the case of *M.C. Mehta* v. *Union of India*.[98] This river passes through the industrial belt of three states and most of the industries are tanneries and leather industries. The untreated effluents discharged by them have reached a catastrophic stage. The court ordered the closures of all the tanneries which do not have an effluent treatment plant and which have not taken any step in that direction. Reiterating its earlier stand[99] the court noted that in our time man's capability to transform his surroundings, if used wisely can bring to all people the benefits of development and opportunity to enhance the quality of life. Wrongly or heedlessly applied, the same power can do incalculable harm to human beings and human environment, particularly the living and working environment.[100] The court also ruled that the financial capacities of the tanneries should be considered as irrelevant while requiring them to establish primary treatment plant and if they cannot set up such plant, they cannot be allowed to exist.[101] Thus, the court has come down heavily on pollution control authorities wherever they have acted arbitrarily and posed a problem in the path of progress.

However, the Supreme Court on 3.9.1991 ordered the closure of 76 tanneries located on the banks of river Ganga in the Kanpur district of U.P. as they have failed to comply with the court's directions to instal water treatment plants to check contamination of the holy river. Mr. M.C. Mehta, an environmentalist, filed this petition in 1985. The Supreme Court has so far delivered two judgements — in 1987 and 1988 — and several interim directions were also issued with a view to save the Ganges from any more contamination.[102]

(I) Recent Trends in Judicial Activism to Protect Environment

The judiciary has played a very vital role in protecting the environment and checking its degradation and pollution. It is the judiciary which introduced the concept of environmental jurisprudence and made continuous serious efforts to make the people aware about the dire, consequences of environmental pollution. Keeping in view the dangerous consequences of environmental pollution, the judiciary has profounded some theories to keep strict vigilance and control on the environmental polluters and offenders. These theories are: theory of 'Absolute Liability',[102a] theory of 'Polluter Pays'[102b] and theory of 'Public Trust'.[102c] Further, the judiciary has made tremendous efforts to protect the flora and fauna and the beauty of the nature by jumping from the principle to another, that is, from strict liability[102d] to absolute liability and, from compensatory principle[102e] to polluter pays principle and to the principle of public trust.

In *L.K. Koolwal* v. *State of Rajasthan and Others*[103] a public interest litigation seeking directions to the Municipal Corporation of Jaipur to improve the sanitation of the city and to remove filth, garbage and dirt from the city.

The Court speaking through Justice Mehta held that preservation of sanitation and environment falls under Article 21 of the Constitution. It is the primary duty of the municipality to provide healthy sanitary conditions within its municipal limits. The court also pointed out that Art. 51-A can ordinarily be called as the duty of citizens, but in fact it is the right of the citizens as it creates the right in favour of the citizens to move the court to see that the State performs its duties faithfully and obligatory and primary duties are performed in accordance with the law of the land.

The Court directed the Municipal Corporation to remove the dirt, filth and garbage from the city within a period of six months and clean the entire Jaipur city and particularly in relation to the areas mentioned in the list submitted by the petitioner with this writ petition.

In *T. Damodhar Rao & Ors.* v. *The Special Officer*, Municipal Corporation, Hyderabad[104] Justice Chaudhary of Andhra Pradesh High Court declared that protection of environment is not only the duty of citizens but is also the obligation of all the organs of the State including courts. He further observed that slow poisoning by the polluted atmosphere caused by environmental pollution amounts to violation of fundamental right of the individuals under Art. 21 of the Constitution of India.

In *M/s Chhatisgarh H.L. Industries* v. *Special Area Development Authority, Bilaspur and Others*[105] the Madhya Pradesh High Court pointed out that protection of the environment from pollution is a matter of public interest and when there is a clash between personal interest and public interest, the latter must prevail.

In *M.C. Mehta* v. *Union of India*[106] a public interest petition was filed in the Court for preventing nuisance caused by the pollution of the river Ganga. The Court observed that the nuisance caused by the pollution of the river Ganga was a public nuisance which was widespread in range and indiscriminate in its effect.

The Supreme Court observed that although Parliament and the State Legislature have enacted many laws imposing duties on the Central and State Boards and the Municipalities for prevention and control of pollution of water, many of those provisions have just remained on paper without any adequate action being taken pursuant thereto. On account of failure of authorities to obey the statutory for several years the water in the river Ganga at Kanpur has become so much polluted that it can no longer be used by the people either for drinking or for bathing. The Nagar Mahapalika of Kanpur has to bear the major responsibility for the pollution of the river near Kanpur city. The court issued specific directions to the Kanpur Municipal Corporation for controlling pollution of the river Ganga.

In *U.P. Pollution Control Board* v. *M/s Modi Distillery and others*[107] the industrial unit of the Company at Modinagar, Ghaziabad was engaged in the business of manufacture and sale of industrial alcohol. The said unit discharged its highly noxious and polluted trade effluents into the Kali river through the Kadrabad Drain and thereby caused continuous pollution of the stream without the consent of the U.P. Water Pollution Board. It was mandatory for the industry to obtain the consent of the Board. The court held responsible everyone incharge and responsible for the conduct of the business of the company, as well as the company deemed to be guilty of the offence.

In *Bhopal Gas Tragedy case,*[108] the Supreme Court has also played a vital role. It showed its deepest concern for the life and liberty of the people which has affected by the leakage of the poisonous gas resulting into the pollution of the environment, affecting adversely the health of millions, the death of many and incapacitating their life forever. The court directed the Government to immediately provide interim relief for the victims of the gas tragedy which has been directed to be released only recently in the month of May, 1993 under the directions of the Government of India to the Reserve Bank of India.

In *Union Carbide Corporation* v. *Union of India,*[109] the Supreme Court directed the Union Carbide Corporation to pay a sum of U.S. Dollars 470 millions to the Union of India in full settlement of all claims and liabilities related to and arising out of the Bhopal Gas Leakage Disaster. The Supreme Court considered it a compelling duty, both judicial and humane, to secure immediate relief to the victims. The court held that right to live in a healthy environment cannot be violated by anyone under the plea that if any harm is caused then the injured party shall be suitably compensated. The right to live in a healthy environment is supreme.

The Supreme Court also emphasized that there is also a need to evolve a national policy to protect national interests from ultra hazardous pursuits of economic giants. Jurists, technologists and other experts in economics, environmentology, sociology and public health etc. should identify areas of common concern and help in evolving proper criteria which may receive judicial recognition and legal sanction.[110] The court further pointed out that there are certain things which a civilized society simply cannot permit to be done to its members, even if they are compensated for their resulting losses.

In *Charan Lal Sahu* v. *Union of India*[111] while upholding the Bhopal Gas Leakage Disaster (Processing of claims) Act, 1985, Justice K.N. Singh rightly observed:

> "In the context of our national dimensions of human rights, right to life, liberty pollution free air and water is guaranteed by the Constitution under Articles 21, 48-A and 51(g). It is the duty of the State to take effective steps to protect the guaranteed constitutional rights"[112]

The learned Judge further observed that the interference with the nature beyond the degree of tolerance may affect our live and livelihood. For every triumph that men make over nature, she takes revenge. The right to life is much more than the right to animal existence and attributes are manifold, as life itself.

In *F.K. Hussain* v. *Union of India*[113] the Kerala High Court pointed out that the right to sweet water and right to free air are the attributes of the right to life to life for these are the basic elements which sustain life itself.

In *M.C. Mehta* v. *Union of India*[114] the Supreme Court of India has issued directions for the exhibition of slides in cinema halls containing information and messages on environment, spread of relative information through Radio and Television and making environment as Compulsory subject in schools and colleges.

In *M/s A.R.C. Cement Ltd. and Others* v. *State of U.P. and Others*[115] the petitioner started operating this cement factory in Doon Valley despite court's directions to declare the area as non-industrial. The petitioner was not permitted to carry on manufacturing process in the area.

In *Tarun Bharat Singh, Alwar* v. *Union of India*[116] the matter involved relates to the environmental pollution caused by mining operations in Sariska Tiger Park in Alwar District in the State of Rajasthan. The court directed that if admittedly or indisputably, mines are situated within protected area, then the mining activities must be stopped. However, if upon a demarcation of the boundary line any mining area is shown to fall clearly outside the protected area, then the bank will not operate.

In *People United for Better Living in Calcutta-Public and Another* v. *State of West Bengal and Other*[117] the court held that the development shall have to be in closest possible harmony with the environment, as otherwise, there would be development but no environment, which would result in total devastation. Time has now come to check and control the degradation of the environment and since the Law Courts also have a duty towards the society for its proper growth and further development and moreoso by reason of definite legislations in regard thereto, it is a plain exercise of the judicial power to see that there is no such degradation of the society and there ought not to be any hesitation thereto.

In *Law Society of India* v. *Fertilizers and Chemicals Travancore Ltd. and Others*[118] a public sector undertaking engaged in manufacturing chemical fertilizers had constructed storage tank having capacity to store 10,000 tons of ammonia gas. A public interest litigation was filed alleging that high potency danger is involved to the human life in allowing to continue the operation of 10,000 ammonia storage tank by the Fertilizer undertaking in the vicinity of that area. The court ordered the de-commission and emptying of the ammonia storage tank and further directed that storage tank should not be used for strong liquid ammonia after de-commission.

The court held that deprivation of life under Article 21 of the Constitutional of India comprehends certainly deprivations other than total deprivation. The guarantee to life is certainly more than immunity from annihilation of life. Right to environment is part of the right to life. A state of perpetual anxiety and fear of extermination of life is not an environment adequate for the health and well being of human race.

In *M/s Mahabir Soap and Gudakhu Factory* v. *Union of India*[119] the petitioner was carrying on tobacco processing operations in its unit, which was generating highly polluted effluents and the effluants were discharged from its unit without any treatment, thereby resulting in pollution of the water. This unit was being operated without the consent of the State Pollution Control Board in violation of Water (Prevention and Control) of water pollution) Act, 1974. The Board stopped the continuance of the industrial unit. The court held that therefusal to allow continuance of industrial unit is in the discretion of the State Board and it is not for the court to go into propriety of reason and substitute its opinion in place of the decision of State Board.

In *India Council for Enviro-Legal Action* v. *Union of India*[120] the court held that all the restrictions, prohibitions regarding construction and setting up of industries or for any other purpose shall meticulously followed by all the concerned States. The activities which have been declared as prohibited within the Coastal Regulation Zone shall not be undertaken by any of the respondent States. The regulations of permissible activities shall also be met culously followed.

In *Ishwar Singh* v. *State of Haryana,*[121] the Punjab and Haryana High Court awarded compensation to the victims of pollution hazards, as violation of Art. 21 of the Indian constitution, caused due to stone-crushers activities in violation of the directions of the Supreme Court.

In *Indian Council for Enviro-Legal Action* v. *Union of India,*[122] The Supreme Court ordered closure of the five hazardous chemical industries located in Bichhri village in Udaipur District of Rajasthan and attached their all moveable and immovable properties, after holding them responsible for inflicting untold misery upon the villagers and causing long lasting damage to the environment in the area. The free flow of untreated toxic sludge of chemical industries caused pollution to water, soil and air. The water in the wells and the streams has turned dark and dirty and became unfit for human consumption.

In *Union of India* v. *Kamath Holiday Resort Pvt. Ltd.*[123] the Supreme Court held that under Section 2 of the Forest (Conservation) Act, 1980, whenever any forest land was to be dereserved for establishing a holiday resort by a private company, permission of the Central Government is imperative. The Court further observed that all current streams of thought lead towards protection of environment and preservation of forest wealth.

In *M.C. Mehta* v. *Union of India*[124] is one of the most leading decision of the Supreme Court regarding environmental protection, is polularly called *Taj Trapezium case*. In this case, the Supreme Court directed that 292 listed coke/coal using industries located in Agra be re-located or closed to prevent degradation to Taj-Mahal The closure by December 31, 1997 is unconditional and irrespective of the fact whether the new unit outside TTZ (Taj Trapezium) is completely set up or not.

In *M.R. Pillai* v. *Executive Officer, Pathiyoor Panchayat,*[125] the Kerala High Court ordered to close down the cashew processing factory as the black smoke omitted from the factory causes asthama and effects health of the people in the locality and of the petitioner who is of old age.

In *the environment Authority-Case*,[126] the apex court approved the draft order prepared by the Central Government for the establishment of an 'authority' within the meaning of 3 of the environment (Protection) Act, 1986. The 'authority' proposed by this order shall be called as "Environment Pollution (Prevention and Control) Authority" shall replace earlier ad-hoc authority — constituted by apex court on a PIL petition.

In *The Almitra H. Patel case*,[127] the apex court ordered, on a PIL petition, for the constitution of an eight member committee to examine the important questions relating to 'solid waste management' in class I cities. It was also directed by the court that the said committee should also suggest ways and means for eco-friendly treatment of solid waste. including its shorting, collection, transportation, disposal, recycling and reuse and proven technologies if any, in this behalf.

In *the Research Foundation Case*,[128] the apex court constituted a High Powered Committee for the purposes of examining in detail the issues relating to Hezardons Waste Management.

5. REVIEW

From the foregoing discussion it becomes clear that the judicial review of legislative measures, governmental programmes and administrative decisions can be an effective instrument of enforcement in environmental matters if the question of locus standi does not stand in the way. Happily, the higher courts in our country, especially the Supreme Court, have made significant contribution in giving a fillip to the citizen's right to a hygienic environment, the exercise of their discretionary powers in environmental matters is yet to take a concrete form. The courts have time and again faced difficulties in respect of investigating machinery required for the citizen's suits in environmental matters. As a result, the difficulty has been felt about availability of authentic data. To overcome this, the courts have resorted to appointing distinguished persons as experts or commissioners to investigate and report it. This ad-hoc practice, however, needs to be put on a permanent footing, preferably as a special cell,[129] to meet the growing number of environmental litigation expected in the coming years. In this context, it is suggested here that the environment courts[130] on a regional basis, with a professional judge and two experts drawn from the Ecological Sciences Research Group, should be set up.

However, the compliance with the directions of the Supreme Court have, often, been lukewarm. In Rural Litigation and Environment Kendra,[131] popularly known also as Doon Valley case, the court's directions in regard to closing of mines and quarries were followed more in their breach by the District Administration and other concerned Departments of U.P. Government and illegal quarrying continued even in the prohibited areas. Often the court itself has felt that its powers are limited, as in the case of the Bombay pavement dwellers case.[132] Here the Supreme Court of India directed the Bombay Municipal Corporation and the Government of Maharashtra to submit a list of vacant lands which may be used to house the pavement dwellers following their eviction. However, the authorities evaded this direction of the court under the cover of a "policy decision".

Despite all these problems, the efforts of higher courts, in environmental pollution control through citizens' suits, are indeed appreciable. Judicial activism in this sphere is the need of the hour, more especially when the legislature is lagging behind in bringing the lacunae in the existing legal mechanism and the administration is still not well enough equipped to meet the challenge.

In future too, the courts will have to play an active role in the formulation and effective determination of environmental policy so that elected branches of government become accountable to law and the public. The shelving of Silent Valley project in Kerala is the good achievement of the environmentalists in their epic struggle for the defence of environment where the judiciary okayed the project fully relying on the executive decision.[133] Now the time has come for the environmentalists to take also other important ecological issues such as contract — felling of trees in the forests, mining and quarrying of hill slopes, air and water pollution caused by mines and factories in the private and public sectors, to the courts.

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4. See the Wildlife (Protection) Act, 1972.
5. See the Forest (Conservation) Act, 1980.
6. See the Environment (Protection) Act, 1986.
7. *Ibid.* S.5.
8. *Ibid.*, S.19.
9. For these earlier Acts, see supra notes 2 to 5.
10. Section 19 of the Environment (Protection) Act, 1986.
11. See Municipal Council, *Ratlam* v. *Vardhichand*, AIR 1980 SC 1680.
12. See R.L. & E. Kendra, *Dehradun* v. *State of U.P.*, AIR 1985 SC 652.
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19. *Hoskot* v. *State of Maharashtra*, AIR 1978 S.C. 1548; *Hussainara Khatton* v. *State of Bihar*, AIR 1979 S.C. 1360.
20. See for example, *Rural Litigation and Entitlement, Kendra, Dehradun* v. *State of U.P.*, AIR 1985 S.C. 652; *M.C. Mehta* v. *Union of India*, A.I.R. 1987 S.C. 965, wherein the court ordered the State to pay Rs. 10,000 remuneration to the involved public interest advocates in addition to costs.
21. See for example, *Bandhua Mukti Morcha* v. *Union of India*, AIR 1984 S.C. 802 (conditions of labour); R.L. and E; *Kendra, Dehradun* v *State of Uttar Pradesh*, AIR 1985 S.C. 652 (environmental litigation); In *Sunil Batra* v. *Delhi Adminis-*

tration, SIT 1978 S.C. 1675; the judges themselves visited a prison to assess its conditions, In *Wangla* v. *Union of India* (1988) 1 Scale 118, the court appointed an independent committee to examine the quality of better imported soon after the chernobyl nuclear incident.

22. Bandhua Mukti, ibid. at 814. The Court did, of course in this case suggest that the evidence and reports would be made available to all affected parties and that they would have an opportunity to dispute the facts.
23. *Ibid*. at 815.
24. See *Sunil Batra* v. *Delhi Administration*, AIR 1978 S.C. 1675; later see *Upendra Baxi* v. *State of U.P.* (1983) 2 S.C.C. 308.
25. *People's Union for Democratic Rights* v. *Union of India*, AIR 1982 S.C. 1473; *Bandhua Mukti Morcha* v. *Union of India*, (1984) 3 S.C.C. 161.
26. *M.H. Hoskot* v. *State of Maharashtra*, AIR 1978 SC. 802.
27. Hoskot *ibid*; *Hussainara Khatoon* v. *State of Bihar*, AIR 1979 S.C. 1360.
28. *Ogla Tellis* v. *Bombay Municipal Corporation*, AIR 1986 S.C. 180.
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31. *M.C. Mehta* v. *Union of India*, AIR 1987 S.C. 982.
32. Chief Justice John Marshall, *Marbury* v. *Madison*, 5 U.S. (1 Cranch) 140 (1803), Supreme Court.
33. *Maneka Gandhi* v. *Union of India*, AIR 1978 S.C. 597.
34. Bhagwati, "Bureaucratic ? Phonographers ? Creators ? *The Times of India*, 21-23 September 1986.
35. Jamie Cassels, "Judicial Activism and Public Interest Litigation: Attempting the Impossible ?" The American Journal of Comparative Law: 501-4 (1989).
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37. See *Maneka Gandhi* v. *Union of India*, AIR 1978 S.C. 597; *Francis Coralie Mullin* v. *The Administrator*, U.T. Delhi, AIR 1981 S.C. 746, 750.
38. See for example, the right to legal aid was recognised in *Hoskot* v. *State of Maharashtra*, AIR 1978 S.C. 1675; the right to a livelihood was recognised in *Ogla Tellis* v. *Bombay M. Corp.*, AIR 1986 S.C. 180.
39. The genesis of the fundamental right to a wholesome environment may be traced in *Rural Litigation and Entitlement, Kendra, Dehradun* v. *State of Uttar Pradesh*, AIR 1985 S.C. 652; see also Shyam A. Diwan, Supra note 36.
40. The final judgement of the court was delivered in this case in 1988 in *Rural Litigation and Entitlement, Kendra, Dehradun* v. *State of Uttar Pradesh*, AIR 1988 S.C. 2187.
41. *M.C. Mehta* v. *Union of India*, (1987) 4 S.C.C. 463.
42. *Ibid*., at 482.
43. AIR 1987 AP 171.
44. *Ibid*., at 181.
45. See *Kinari Devi* v. *State of H.P.*, AIR 1988 H.P. 4.
46. See *L.K. Koolwal* v. *State of Rajasthan*, AIR 1988 Raj. 2, 4.
47. See *Mahdavi* v *Tilakan* (1988) (2) Kerala Law Times, 730, 731.
48. The Shriram Fertilizer Gas Leak case (*M.C. Mehta* v. *Union of India*, 1987(1)

S.C.C. 395) has not been deliberately discussed here because it does not advance the link between environmental degradation and Article 21 as the Oleum gas that escaped directly affected the lives and health of the victims. The more subtle link between environmental deterioration and life was absent.

49. Article 14 states: "The State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India".
50. *Ajay Hasia* v. *Khalid Mujib Shervardi* (1981) 1 SSC 722, 741.
51. Shyam A. Divan, "Environmental Protection And Fundamental Rights" XVI(1) Indian Bare Review 24 (1989).
52. Environmental Impact Assessment (EIA) is an exercise to evaluate the probable changes in the various socio-economic and biophysical characteristics in the environment which may result from a proposed project, program or legislation. EIA is undertaken to reduce to a minimum the possibility of an action causing un-anticipated changes in the environment. It assists decision-makers in considering the environmental costs and benefits of the proposed project. Where the benefits sufficiently exceed the costs of the project, the project may be environmentally justified.
53. See Kinkari *Devi* v. *State of H.P.*, AIR 1988 H.P. 4, 9.
54. See "Note on Goa Guidelines on Intergenerational Equity" in 27 International Legal Materials 1108 (1988).
55. Supra note 51 at 25.

55a. *Ibid.*

55b. *Ajeet Mehta* v. *State of Rajasthan*, 1990 Cri. L.J. 1596, 1599.

56. *Municipal Council, Ratlam* v. *Vardhichand*, A.I.R. 1980 S.C. 1622.
57. *Ogla Tellis* v. *Bombay Municipal Corporation*, AIR 1986 S.C. 180.
58. *M.C. Mehta* v. *Union of India*, A.I.R. 1987 S.C. 695.
59. Similarly, neither orders explicitly refer to Article 21 or the right to livelihood in many other cases. These cases are: *Banawasi Seva Ashram* v. *State of U.P.*, (1986) 4 SCC 753; *Karajan Jalasay Y.A.S.A.S. Samiti* v. *State of Gujarat*, AIR 1987 SC 532 and *Gamin Sewa Sanstha* v. *State of U.P.*, 1986 (Supp.) SCC 578. However, the Court has passed interim orders in these cases requiring State agencies to resettle and rehabilitate tribals who were being displaced by dams.
60. *Sachidanand Pandey* v. *State of West Bengal*, AIR 1987 SC 1109.
61. *Banwasi Seva Ashram* v. *State of Uttar Pradesh*, AIR 1987 SC 374; See also S.N. Dhyani, "Tehri Dam and Critical Environmental Issues — Plea for Affirmative Judicial Action" XII (3) Cochin University Law Review 262-63 (1988).
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68. In the Delhi gas leak case, several renowned scientists were invited to the court and their opinions helped to lay down one of the most far-reaching rulings on industrial pollution, see *Rural Litigation of Entitlement, Kendra* v. *State of U.P.*, AIR 1985 S.C.. 652.
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72. D. Meadows, The Limits to Growth, New York Universe Books, 1972, p. 23.
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77. *Ibid.*, at 851.
78. A.I.R. 1980 S.C. 1622 at 1628.
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81. However, in *Society for Protection of Silent Valley* v. *Union of India*, the Kerala High Court was wary of substituting the decision of the government with that of its own on the question whether national assets are to be more conveniently utilised as hydro-electric projects or to be retained in their pristine glory. The judgement was delivered on 2.1 1980 in writ petition numbers 2949 and 3025 of 1979.
82. AIR 1988 S.C. 1187.
83. AIR 1987 S.C. 359 at 363.
84. AIR 1987 S.C. 2426 at 2428.
85. AIR 1988 SC 1187 at 2196.
86. A.I.R. 1987 S.C. 965.
87. See *M.C. Mehta* v. *Union of India*, ibid; *M.C. Mehta* v. *Union of India*, AIR 1987 S.C. 982; *M.C. Mehta* v. *Union of India*, AIR 1987 S.C. 1086. We may also refer these as Mehta No. 1, Mehta No. 2 and Mehta No. 3 respectively.
88. Supra note 13.
89. This plant was closed under the orders of the District Magistrate, Delhi.
90. These conditions comprised the constitution of the expert committee appointed by the court to ensure the observance of the recommendations of the earlier two committees and submit to it a report with copies to the petitioner and Shriram.
91. Supra note 14.
92. Mehta No. 3, Supra note 14 at 1089.
93. ***Ibid.*** at 1091.
94. ***Ibid.***, at 1095.
95. ***Ibid.***, at 1097.
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98. AIR 1988 S.C. 1037.
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100. Supra note 25 at 1038.
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102. See "SC orders tanneries Closure" The Times of India, September 4, 1991. p.6; see also *M.C. Mehta* v. *Union of India*, AIR 1988 SC 115. This case is known as Ganga Pollution (Tanneries') case.

102a. See *M.C. Mehta* v. *Union of India*, AIR 1987 SC 1086. This case is known as Oleum Gas Leak case.

102b. See *Indian Council for Enviro-Legal Action* v. *Union of India* AIR, 1996 SC 1446.

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116. 1993 Supp. (I) SCC 4.
117. AIR 1993 Cal. 215.
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120. AIR 1995 SC 2252.
121. AIR 1996 P & H 30.
122. AIR 1996 SC 1446.
123. AIR 1996 SC 1040.
124. AIR 1997 SC 734.
125. AIR 1997 Ker. 162.
126. *M.C. Mehta* v. *Union of India*, 1998 (1) SCALE 21 and 75.
127. *Almitra H. Patel and Others* v. *Union of India* 1998(1) SCALE 131.
128. *Research Foundation for Science Technology and National Resource Policy* v. *Union of India and Others*, 1997 SCALE SP-5 1998(1) SCALE 184.
129. For the appointment of a National Environmental Protection Authority, See The National Environmental Protection Authority Act, 1997.
130. For the appointment of National Environmental Tribunal with its Benches, see The National Environmental Tribunal Act, 1995.
131. *Rural Litigation and Entitlement Kendra* v. *State of U.P.*, AIR 1985 S.C. 652; also AIR 1987 S.C. 359.
132. See *Ogla Tellis* v. *Bombay Municipal Corporation*, AIR 1986 S.C. 180.
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CHAPTER EIGHT

Concluding Observations And Probable Future Trends

At Global Level: Increasing globlization and accelerated pace of development have contributed to environmental degradation all over the world. Depletion of natural resources, extinction of 'bio-diversity'[1] and endangered existence are some of the outstanding issues which humankind has to address in order to survive. Eco-systems around the world are under increasing pressure from human activities. Limited natural resources amidst unlimited wants upset the equilibrium of environment and development.[2]

Biological diversity supports society in many ways. Climatic stability, food security, fresh water security and the health needs of humans around the world all depend directly upon maintaining and using the world's biological diversity. More than 40% of the world's economy and some 80% of the needs of the world's poor are derived from biological diversity. Loss of biological diversity threatens these services and consequently society in general.[3] Accordingly, UN Conference on Human Environment held in Stockholm in 1972 identified as a priority the need for the conservation of biological diversity.

The post-1972 era inspired by the Stockholm declaration saw a movement worldwide for the promotion of green fraternity. Massive codification of environmental laws at the international and national level marked the phase.[4] The World Charter for Nature, has the strategy for action and reform for the global environmental movement. Our Common Future, the Burntland Commission report on environment and development in 1987 sensatised the international community to realise the goals of sustainable development. The UNEP report, Global Environment Perspective to the Year 2000, stressed the new challenge facing conservation and sustainable use. The Earth Summit (1992) at Rio de Janerio reiterated its commitment to environment and sustainable development and urged upon the member states to swing into action immediately before the wounded earth reaches to a point of no recovery.

The contribution of Rio resides in five agreements embracing:

(i) the Framework Convention on Climate Change;

(ii) the Convention on Biological Diversity;
(iii) Agenda 21;
(iv) the Rio Declaration;
(v) and the Forest Principles.

The outcome of Rio suggests that some of the key concerns at the summit including definitions of sustainability, access to finance, and environmental degradation under domestic versus the global context, need to be discussed fully.

First, the sensitivity of developing and large countries, like Brazil, India and China is reflected to the new concepts of sustainability when they saw it as an attack on their sovereign rights. The concept of environmental space' is of great importance in this context. This defines the space for developing countries to increase their carbon dioxide emissions in line with the growing population. Space for such emissions has to be evaluated by the developed countries, as they have taken the major share of environmental space. Hence they are primarily responsible for creating the problem of climatic change and global warming. Thus, 25 per cent of the world's population consumes 85 per cent of its wealth and produce 90 per cent of its waste; if rich reduce their wasteful consumption by 25 per cent worldwide pollution will be reduced by 22.5 per cent, while the poor 75 per cent reduced consumption totally and disappear from this earth the reduction in pollution would be only 10 per cent. The pattern of north-south negotiations is exemplified by Malaysia when it demanded that every country in the world should keep 30 per cent of its territory under forest, or pay compensation to another to preserve this tree space and carbon sink for it, known in the forest negotiations as the call for the 'greening of the world'.[5] However, the attitude of the major developed countries failed to show any sensitivity to such concerns.

Secondly, access to resources and technology is of key importance in enabling developing countries to support environmental protection. There was a lack of commitment on the part of developed countries on the transfer of money and technology to confront this challenge.[6] In terms of resources the summit estimated requirements to monitor environmental pollution in south to be $ 600 billion annually with external resource requirements being put at $ 125 billion per year. Developing countries demanded a Green Fund untouched by World Bank conditionality. The developed nations are paying only $ 19 billion.

Thirdly, environmental degradation issues were examined carefully in Agenda 21 but primarily in the context of domestic policy, whereas maximum attention at the conference was devoted to global or transboundary environmental problems. Developing countries were disappointed by the much focus on global environmental problems like global warming and biodiversity. Attempts to reach or encourage firm commitments in areas of interest to developing countries were limited.[7]

Thus Rio created a full recognition of the environment development relationship but also unfolded the need to confront more fundamental questions on the global-national political economy. Environmental problems, embodied in conventions and international venues, cannot be divorced from the priorities of developing and developed countries and the factors underlying any biases in the global economic system.

The Rio Summit was a great success in terms of participation, but was a complete failure in terms of achievement of its objective. Since the contribution of developed nations to the world environmental pollution is approximately 80%, it was argued that the developed nations should bear at least $125 billion and the rest $500 billion to be borne by the developing nations. The response to this question has been negative from developed nations.

The developing countries (The South), on the other hand, harbour suspicions that multilateral environmental deliberations are disguised attempts of the developed world (The North) to keep them economically disadvantaged. The state of the environment in 1997 of eight environmental heavy weights is shown in table I below:

Table 9.1: Eight Environmental Heavy Weights

Country	Per cent Share in World's				
	Population	GDP	Carbon emissions	Forest area	Flowering plant species
1. America	5	26	23	6	8
2. Russia	3	2	7	21	9
3. Japan	2	17	5	0.7	2
4. Germany	1	8	4	0.3	1
5. China	21	2	13	4	12
6. India	17	1	4	2	6
7. Indonesia	4	1	1	3	8
8. Brazil	3	2	1	16	22
Total	56	59	58	53	—

Source: State of the world 1997, published by the World Watch Institute of America.

The UN Conference at Stockholm (1972), Montreal Protocol (1987), the Earth Summit held at Rio-de-Jenerio (1992) and Koyoto Summit (1997)[8], have all been great success in terms of participation and creation of awareness among the members of the world community, but have failed in bringing about a consensus on the issue of sharing the global environmental costs, that is, investment in global environmental programmes carried on by various UN agencies for removing the environmental pollution. This is so because the present global environmental politics has been characterised more by feet-dragaging and denial of problems than by cooperation.[9]

The rise of the global Environmental Facility (GEF), represents an attempt to bring about collaboration, on financing global environmental problems, between the World Bank, the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP).

IN INDIA

The concern for environment in India basically stemmed from mass poverty, galloping population, underdevelopment and a desire for industrialisation. Despite rapid economic and planned development India still contains 40 per cent people living below poverty line, 700 million people having no access to elementary sanitation, 300 million people without safe drinking water and 380 million illiterates out of which two thirds are females.[10]

India is one of the twelve megabiodiversity centres in the world. It has a wide diversity of ecological habitats like forests, grasslands, wetlands, marine and coastal ecosystems. According to the available data, India ranks tenth in the World and fourth in Asia in plant diversity. Surveys conducted so far have inventories over 49000 species of plants and over 81000 species of animals. To date, only 70% of the area has been surveyed, and the flora and fauna identified are only a part of the diversity existing in India. India is also an acknowledged centre for crop diversity. It is home of 167 cultivated plant species, and 320 species of their wild relatives. The gene bank of the National Bureau of Plant Genetic Resources has a collection of over 144,000 varieties. Studies in genetic diversity are however not very widespread.[11]

It is estimated that the availability of medicinal plants in India is under serious threat over 95% of medicinal plants used by Indian industry today are collected from the wild. Over 70% of the plant collections involve destructive harvesting because of the use of parts like roots, bark, wood, stem and the whole plant (in case of herbs), and this poses a definite threat to the genetic stock and to the diversity of medicinal plants.[12]

After the Stockholm Conference (1972), the Government of India appointed the National Committee on Environmental Planning and Co-ordination (NCEPC) with the objective to seek advice and recommendations for the preservation and protection of environment. In 1980, the Tiwari Committee was appointed which recommended for establishment of Department of Environment for directing the administrative machinery and for taking legislative measures for environmental protection. In 1985, the Ministry of Environment and Forest was created. Lateron, NCEPC was replaced by National Committee on Environmental Planning (NCEP) to prepare annual "State of Environment Report" for the country and to prepare environmental awareness through the massmedia etc.

The Department of Environment functions with the aid of two subsidiaries —the NCEP and National Development Board. The Botonical Survey of India, Zoological Survey of India, Centre Board for prevention and control of Water Pollution and the National Museum of National History function under the Department of Environment.

India has made an attempt to control pollution through its legislative activity. The pre-Stockholm Conference (1972) era Laws[13] in India contain the provisions to control and check the activities which are allegedly hazardous to the safeguards of an environment but they have no direct bearings as such.

In the post-Stockholm era, a rapid and extensive legislative activity to check anything that pollutes environment has taken place in India. Parliament has passed a large number of legislations which exclusively deal with the protection of environment and these legislations are:[14] The Water (Prevention and Control of Pollution) Act, 1974; Forest (Conservation) Act, 1980; The Air (Prevention and Control of Pollution) Act, 1981; Environment (Protection) Act, 1986; Public Liability Insurance Act, 1991 and National Environment Tribunal Act, 1995.

In brief, Indian environmental statutes, though impressive in range and coverage and more often observed in breach than in application. The deterrent theory of punishment utilised under strict and absolute liability principle has achieved some degree of success.[15]

To make the environmental protection a Constitutional mandate, Article 48-A and 51-A were inserted by the 42nd Amendment Act, 1976 in the Constitution of India which directly deal with the protection of environment. Article 48-A of the Directive Principle of State Policy states:

> "The State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country." The fundamental duty enshrined in Article 51-A(g) says: "It shall be duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures".

Thus Protection of environment is Constitutional policy. Entitlement to a clean environment is one of the recognised basic human rights of the citizens in India. Environmental protection has become common cause of all the people.

The role of judiciary has been of great importance in the area of environment protection but is slow and expensive. The limitation of absence of any machinery of the court to investigate factual and technical aspect of cases involving hazardous substances and waste have contributed to the judicial remedy being inadequate.

However, the judicial attitude has also shown that the effective and speedy devices to protect the environment may be made available to the citizens through its writ jurisdiction by entertaining petitions. The Indian judiciary has shown that it is not bound by the narrow provisions of the existing environmental laws. Rather, it has given very wide ranging reliefs, which are not even contemplated under the environmental laws. It is a welcome approach and it has admitted exceptions to the rigid rule of locus standi in the public interest. It has frequently entertained petitions under Articles 32 and 226 of the Constitution of India filed by voluntary organisations and the public spirited persons interested in protection of environment. It has also treated letters and other informal communications as regular writ petitions.[16] It has thus done a commendable work in arousing the social consciousness about the prevention and control of environmental pollution.

However, the Indian Judiciary has much to contribute in the area of environment in the times to come, with the entry of multinational investors under the India's policy of economic liberalisation. The changing socio-economic conditions of the country may further call for judicial activism based on the principle of sustainable development which must be environmentally sustainable too. There is utmost urgent need for careful handling of environmental cases by judiciary which should work out equities in favour of industrialists and the governments which had already invested huge money in the major projects.

PROBABLE FUTURE TRENDS

Seeing the past experiences and recent developments in science, technology and economics, as well as population explosion, some probable future trends appear to emerge in environmental pollution, environmental protection and sustainable development. The trends of environmental degradation and increase of pollution which exist at present are likely to increase in future also to make the problem more complicated and difficult for the present and future generations.[17]

The 20th century has given man two things.[18] First the technical capability to achieve any thing he can imagine and new tools to make his life easier. Second, for the first time in history, the earth is facing billions of human beings selfishly eating away its non-renewable resources at an alarming speed. The number is continuously increasing and no body knows how the planet earth will in future cope with this increasing activity.

In 21st Century, a very worrying picture will emerge of South East Asia and Africa, where population growth is much faster than the land and land production would not be enough for the growing population of these regions.

In 17th Century, when population overshot food production in Europe, Millions of European were forced to go out and this led to establishment of colonies. It is unfortunate that in future there will be no more unexplored places on this earth planet where the ballooning populations of these developing countries could go and reside.

In the 1970s, the first report of the club of Rome, says: "If the present growth trends in world population, industrialisation, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years".[19]

The world keeps on changing constantly with time and it brings new changes, wether we are ready for them or not. However devastating or unexpected these changes may be, whatever cause of these changes may be, they all have some side effects. Until the end of the cold war, the world powers were obsessed with military superiority and inventing tools for faster destruction of humanity. Today, the Central American Intelligence (CIA), which was previously obsessed with gathering information on the military capabilities of other countries, is now gathering information on looming environmental threats. This trend is likely to continue in future also.

The goals of the 1992 UN Earth Summit at Rio marked a turning point in international thinking on environment and sustainable development. Agenda 21 recognised that growth, poverty alleviation, population policy and environmental protection were mutually reinforcing and supporting. Economic growth, without appropriate environmental policies will adversely affect growth in future.[20]

SUGGESTIONS

In view of the above the following suggestions are submitted to control environmental pollution, save environment from degradation and maintain sustainable development:

1. Pollution control law should be made more effective and should be strictly enforced.
2. Environmental law is required to be amended so that instead of criminal liability, tort (strict) liability should be imposed for an offence under environmental laws. In that case the tortious liability would shift the environment problem from criminal law to that of convenient civil law where evidence is simpler.
3. Environmental awareness and pollution should be incorporated in the curriculum upto Class XII.
4. Environmental law should be amended to shift the onus on the polluters to prove their innocence.
5. Standards of pollution should be laid down by Parliament or the State Legislatures. It must not be delegated to Boards and there must be uniform standards throughout the country.
6. The Boards must be given more powers to cancel licence and close the industries in case of violation of any of the provisions of the acts.
7. The Environment (Protection) Act must provide mandatory provisions for making inventory of polluting industries in the cities, towns and urban areas. The provisions shall also be made for shifting the inherently dangerous industries from cities, towns and urban areas to the industrial zones.
8. Right to information should be made part of every pollution control law.
9. There must be codified a comprehensive law for controlling noise pollution.
10. All necessary, possible and effective stringent measures should be taken to stop deforestation in the country.

11. Provision must also be made to prescribe deterrent punishment like life imprisonment and confiscation of property of the corrupt officers working under the Board whose passive support or dereliction of statutory duty helps the growth of industrial pollution.
12. Necessary legislation should be devised to settle the accountability of polluter as against the victim by following polluter-pays principle.[21] Presently, the Public Liability Insurance Act of 1991 and National Environmental Tribunal Act, 1995 should be utilised to provide immediate relief to the persons affected by water and air pollution.
13. A district level unit of the Pollution Control Board should be established. The requirement of sixty day's notice to the Board or such proposed unit should be relaxed for greater public participation and immediate action.
14. Waste management policy should form an integral component of licence application and should be such as to minimise the generation of wastes.
15. Now the time has come when it has become imperative to have a comprehensive code to deal with all the aspects of hazardous substances and wastes and determination of liability arising out of accidents coupled with a separate set of tribunals to adjudicate dispute relating to hazardous substances, process and wastes.

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IMPORTANT DOCUMENTS ON ENVIRONMENT: NATIONAL AND INTERNATIONAL

DOCUMENT-I(A)

The Water (Prevention and Control of Pollution) Act, 1974

No. 6 of 1974

[23rd March, 1974]

An Act to provide for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water, for the establishment, with a view to carrying out the purposes aforesaid, of Boards for the prevention and control of water pollution, for conferring on and assigning to such Boards powers and functions relating thereto and for matters connected therewith.

Whereas it is expedient to provide for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water, for the establishment, with a view to carrying out the purposes aforesaid, of Boards for the prevention and control of water pollution and for conferring on and assigning to such Boards powers and functions relating thereto;

And whereas Parliament has no power to make laws for the States with respect to any of the matters aforesaid except as provided in articles 249 and 250 of the Constitution;

And whereas in pursuance of clause (1) of article 252 of the Constitution resolutions have been passed by all the Houses of the Legislatures of the States of Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Tripura and West Bengal to the effect that the matters aforesaid should be regulated in those States by Parliament by law;

Be it enacted by Parliament in the Twenty-fifth year of Republic of India as follows:—

CHAPTER I

PRELIMINARY

1. Short title, Application and Commencement.—(1) This Act may be called the Water (Prevention and Control of Pollution) Act, 1974.

(2) It applies in the first instance to the whole of the States of Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Tripura and West Bengal and the Union Territories; and it shall apply to such other State which adopts this Act by resolution passed in that behalf under clause (1) of article 252 of the Constitution.

(3) It shall come into force, at once in the State of Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Tripura and West Bengal and in the Union territories; and in any other State which adopts this Act under clause (1) of article 252 of the Constitution on the date of such adoption and any reference in this Act to the commencement of this Act shall, in relation to any State or Union territory, mean the date on which this Act comes into force in such State or Union territory.

2. Definitions.—In this Act, unless the context otherwise requires,—

(a) "Board" means the Central Board or a State Board;

[1][(b) "Central Board" means the Central Pollution Control Board constituted under section 3];

(c) "Member" means a member of a Board and includes the chairman thereof;

[2][(d) "Occupier", in relation to any factory or premises, means the person who has control over the affairs of the factory or the premises, and includes, in relation to any substance, the person in possession of the substance;]

[3][dd) "Outlet" includes any conduit pipe or channel, open or closed, carrying sewage or trade effluent or any other holding arrangement which causes or is likely to cause, pollution;]

(e) "pollution" means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as many, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms;

(f) "prescribed" means prescribed by rules made under this Act by the Central Government or, as the case may be, the State Government;

(g) "Sewage effluent" means affluent from any sewerage system or sewage disposal works and includes sullage from open drains;

[4][(gg) "sewer" means any conduit pipe or channel, open or closed, carrying sewage or trade effluent;]

[5][(h) "State Board" means a State Pollution Control Board constituted under section 4;]

(i) "State Government" in relation to a Union territory means the Administrator thereof appointed under article 239 of the Constitution;

(j) "stream" includes—
  (i) river,
  (ii) water course (whether flowing or for the time being dry);
  (iii) inland water (whether natural or artificial);
  (iv) sub-terranean waters;
  (v) sea or tidal waters to such extent or, as the case may be, to such point as the State Government may, by notification in the Official Gazette, specify in this behalf;

(k) "trade effluent" includes any liquid, gaseous or solid substance which is discharged from any premises used for carrying on any [6][industry, operation or process, or treatment and disposal system], other than domestic sewage.

CHAPTER II

THE CENTRAL AND STATE BOARDS FOR PREVENTION AND CONTROL OF WATER POLLUTION

3. **Constitution of Central Board.**—(1) The Central Government shall, with effect from such date (being a date not later than six months of the commencement of this Act in the States of Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Tripura and West Bengal and in the Union territories) as it may, by notification in the Official Gazette, appoint, constitute a Central Board to be called the [7][Central Pollution Control Board] to exercise the power conferred on the perform the functions assigned to that Board under this Act.

(2) The Central Board shall consist of the following members, namely:—

(a) a full-time chairman, being a person having special knowledge or practical experience in respect of [8][matters relating to environmental protection] or a person having knowledge and experience in administering institutions dealing with the matters aforesaid, to be nominated by the Central Government;

(b) [9][such number of officials, not exceeding five,] to be nominated by the Central Government to represent that Government;

(c) such number of persons, not exceeding five to be nominated by the Central Government, from amongst the members of the State Boards, of whom not exceeding two shall be from those referred to in clause (c) of sub-section (2) of section 4;

(d) [10][such number of non-officials, not exceeding three,] to be nominated by the Central Government, to represent the interests of agriculture, fishery or industry or trade or any other interest which, in the opinion of the Central Government, ought to be represented;

(e) two persons to represent the companies or corporations owned, controlled or managed by the Central Government, to be nominated by that Government;

[11][(f) a full-time member-secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects of pollution control, to be appointed by the Central Government.]

(3) The Central Board shall be a body corporate with the name aforesaid having perpetual succession and a common seal with power, subject to the provisions of this Act, to acquire, hold and dispose of property and to contract, and may, by the aforesaid name, sue or be sued.

4. Constitution of State Boards.—(1) The State Government shall, with effect from such date [12]*** as it may, by notification in the Official Gazette, appoint, constitute a [13][State Pollution Control Board], under such name as may be specified in the notification, to exercise the powers conferred on and perform the functions assigned to that Board under this Act.

(2) A State Board shall consist of the following members, namely:—

(a) a [14][*** chairman, being a person having special knowledge or practical experience in respect of [15][matters relating to environmental protection] or a person having knowledge and experience in administering institutions dealing with the matters aforesaid, to be nominated by the State Government [16][Provided that the chairman may be either whole-time or part-time as the State Government may think fit;]

(b) [17][such number of officials, not exceeding five,] to be nominated by the State Government to represent that Government;

(c) [18][such number of person, not exceeding five,] to be nominated by the State Government from amongst the members of the local authorities functioning within the State;

(d) [19][such number of non-officials, not exceeding three] to be nominated by the State Government to represent the interest of agriculture, fishery or industry or trade or any other interest which, in the opinion of the State Government, ought to be represented;

(e) two persons to represent the companies or corporations owned, controlled or managed by the State Government, to be nominated by that Government;

[20][(f) a full-time member-secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects of pollution control, to be appointed by the State Government.]

(3) Every State Board shall be a body corporate with the name specified by the State Government in the notification under sub-section (1), having perpetual succession and a common seal with power, subject to the provisions of this Act, to acquire, hold and dispose of property and to contract, and may, by the said name, sue or be sued.

(4) Notwithstanding anything contained in this section, no State Board shall be constituted for a Union territory and in relation to a Union territory, the Central Board shall exercise the powers and perform the functions of a State Board for that Union territory:

Provided that in relation to an Union territory the Central Board may delegate all or any of its powers and functions under this sub-section to such person or body of persons as the Central Government may specify.

5. Terms and conditions of service of members.—(1) Save as otherwise provided by or under this Act, a member of a Board, other than, a member-secretary, shall hold office for a term of three years from the date of his nomination:

Provided that a member shall, notwithstanding the expiration of his term, continue to hold office until his successor enters upon his office.

[21][(2) The term of office of a member of a Board nominated under clause (b) or clause (e) of sub-section (2) of Section 3 or clause (b) or clause (e) of sub-section (2) of section 4 shall come to an end as soon as he ceases to hold the office under the Central Government or the State Government or, as the case may be, the company or corporation owned, controlled or managed by the Central Government or the State Govern-

ment, by virtue of which he was nominated.]

(3) The Central Government or, as the case may be, the State Government may, if it thinks fit, remove any member of a Board before the expiry of his term of office, after giving him a reasonable opportunity of showing cause against the same.

(4) A member of a Board, other than the member-secretary, may at any time resign his office by writing under his hand addressed—

(a) in the case of chairman, to the Central Government or, as the case may be, the State Government; and

(b) in any other case, to the chairman of the Board.

and the seat of the chairman or such member shall thereupon become vacant.

(5) A member of a Board, other than the member-secretary, shall be deemed to have vacated his seat if he is absent without reason, sufficient in the opinion of the Board, from three consecutive meetings of the Board, [22][or where he is nominated under clause (c) or clause (e) of sub-section (2) of section (3) or under clause (c) or clause (e) of sub-section (2) of section 4, if he ceases to be a member of the State Board or of the local authority or, as the case may be, of the company or corporation owned, controlled or managed by the Central Government or the State Government and such vacation of seat shall, in either case, take effect from such date as the Central Government or, as the case may be, the State Government may, by notification in the Official Gazette, specify.]

(6) A casual vacancy in a Board shall be filled by a fresh nomination and the person nominated to fill the vacancy shall hold office only for the remainder of the term for which the member in whose place he was nominated.

(7) A member of a Board [23][shall be eligible for renomination].

(8) The other terms and conditions of service of a member of a Board, other than the chairman and member-secretary, shall be such as may be prescribed.

(9) The other terms and conditions of service of the chairman shall be such as may be prescribed.

6. Disqualifications.—(1) No person shall be a member of a Board, who—

(a) is, or at any time has been adjudged insolvent or has suspended payment of his debts or has compounded with his creditors, or

(b) is of unsound mind and stands so declared by a competent court, or

(c) is, or has been, convicted of an offence which, in the opinion of the Central Government or, as the case may be, of the State Government, involves moral turpitude, or

(d) is, or at any time has been, convicted of an offence under this Act, or

(e) has directly or indirectly by himself or by any partner, any share or interest in any firm or company carrying on the business of manufacture, sale or hire of machinery, plant, equipment, apparatus or fittings for the treatment of sewage or trade effluents, or

(f) is a director or a secretary, manager or other salaried officer or employee of any company or firm having any contract with the Board, or with the Government constituting the Board, or with a local authority in the State, or with a company or corporation owned, controlled or managed by the Government, for the carrying out of sewerage schemes or for the installation of plants for the treatment of sewage or trade effluents, or

(g) has so abused, in the opinion of the Central Government or as the case may be, of the State Government, his position as a member, as to render his continuance on the Board detrimental to the interest of the general public.

(2) No order of removal shall be made by the Central Government or the State Government, as the case may be, under this section unless the member concerned has been given a reasonable opportunity of showing cause against the same.

(3) Notwithstanding anything contained in sub-sections (1) and (7) of section 5, a member who has been removed under this section shall not be eligible for renomination as a member.

7. Vacation of seats by members.—If a member of a Board becomes subject to any of the disqualifications specified in section 6, his seat shall become vacant.

8. Meetings of Boards.—A Board shall meet at least once in every three months and shall observe such rules of procedure in regard to the transaction of business at its meetings as may be prescribed:

Provided that if in the opinion of the chairman, any business of an urgent nature is to be transacted, he may convene a meeting of the Board at such time as he thinks fit for the aforesaid purpose.

9. Constitution of committees.—(1) Board may constitute as many committees consisting wholly of members or wholly of other persons or partly of members and partly of other persons, and for such purpose or purposes as it may think fit.

(2) A committee constituted under this section shall meet at such

time and at such place, and shall observe such rules of procedure in regard to the transaction of business at its meetings, as may be prescribed.

(3) The members of a committee (other than the members of Board) shall be paid such fees and allowances, for attending its meetings and for attending to any other work of the Board as may be prescribed.

10. Temporary association of persons with Board for particular purposes.—(1) A Board may associate with itself in such manner, and for such purposes, as may be prescribed any person whose assistance or advice it may desire to obtain in performing any of its functions under this Act.

(2) A person associated with the Board under sub-section (1) for any purpose shall have a right to take part in the discussions of the Board relevant to that purpose, but shall not have a right to vote at a meeting of the Board, and shall not be a member for any other purpose.

[24][(3) A person associated with the Board under sub-section (1) for any purpose shall be paid such fees and allowances, for attending its meetings and for attending to any other work of the Board, as may be prescribed.]

11. Vacancy in Board not to invalidate acts or proceedings.—No act or proceeding of a Board or any committee thereof shall be called in question on the ground merely of the existence of any vacancy in, or any defect in the constitution of, the Board or such committee, as the case may be.

[25][**11A. Delegation of powers to Chairman.**—The chairman of a Board shall exercise such powers and perform such duties as may be prescribed or as may, from time to time, be delegated to him by the Board.]

12. Member-secretary and officers and other employees of Board.—(1) Terms and conditions of service of the member-secretary shall be such as may be prescribed.

(2) The member-secretary shall exercise such powers and perform such duties as may be prescribed or as may, from time to time, be delegated to him by the Board or its chairman.

(3) Subject to such rules as may be made by the Central Government or, as the case may be, the State Government in this behalf, a Board may appoint such officers and employees as it considers necessary for the efficient performance of its functions.

[26][* * *

[27][(3A) The method of recruitment and the terms and conditions of

service (including the scales of pay) of the officers (other than the member-secretary) and other employees of the Central Board or a State Board shall be such as may be determined by regulations made by the Central Board or, as the case may be, by the State Board:

Provided that no regulation made under this sub-section shall take effect unless,—

(a) in the case of a regulation made by the Central Board, it is approved by the Central Government; and

(b) in the case of a regulation made by a State Board, it is approved by the State Government.]

[28][(3B) The Board may, by general or special order, and subject to such conditions and limitations, if any, as may be specified in the order, delegate to any officer of the Board such of its powers and functions under this Act as it may deem necessary.]

(4) Subject to such conditions as may be prescribed, a Board may from time to time appoint any qualified person to be a consulting engineer to the Board and pay him such salaries and allowances and subject him to such other terms and conditions of service at it thinks fit.

CHAPTER III

13. Constitution of Joint Board.—(1) Notwithstanding anything contained in this Act, an agreement may be entered into—

(a) by two or more Governments of contiguous States, or

(b) by the Central Government (in respect of one or more Union territories) and one or more Governments of State contiguous to such Union territory or Union territories,

to be in force for such period and to be subject to renewal for such further period if any, as may be specified in the agreement to provide for the constitution of a Joint Board,—

(i) in a case referred to in clause (a), for all the participating States, and

(ii) in a case referred to in clause (b), for the participating Union territory or Union territories and the State or States.

(2) An agreement under this section may—

(a) provide, in a case referred to in clause (a) of sub-section (1), for the apportionment between the participating States and in a case referred to in clause (b) of that sub-section for the apportionments between the Central Government and the participating State Government or State Governments, of the expenditure in connection with the joint Board;

(b) determine, in a case referred to in clause (a) of sub-section (1), which of the participating State Governments and in a case referred to in clause (b) of that sub-section, whether the Central Government or the participating State Government (if there are more than one participating State, also which of the participating State Governments) shall exercise and perform the several powers and functions of the State Government under this Act and the references in this Act to the State Government shall be construed accordingly;

(c) provide for consultation, in a case referred to in clause (a) of sub-section (1), between the participating State Governments and in a case referred to in clause (b) of that sub-section, between the Central Government and the participating State Government or State Governments either generally or with reference to particular matters arising under this Act;

(d) make such incidental and ancillary provisions, not inconsistent with this Act, as may be deemed necessary or expedient for giving effect to the agreement.

(3) An agreement under this section shall be published, in a case referred to in clause (a) of sub-section (1), in the Official Gazette of the participating States and in a case referred to in clause (b) of that sub-section, in the Official Gazettee of participating Union territory or Union territories and participating State or States.

14. Composition of Joint Boards.—(1) A Joint Board constituted in pursuance of an agreement entered into under clause (a) of sub-section (1) of section 13 shall consist of the following members, namely:—

(a) a full-time chairman, being a person having special knowledge or practical experience in respect of [29][matters relating to environmental protection] or a person having knowledge and experience in administering institutions dealing with the matters aforesaid, to be nominated by the Central Government;

(b) two officials from each of the participating States to be nominated by the concerned participating State Government to represent that Government;

(c) one person to be nominated by each of the participating State Governments from amongst the members of the local authorities functioning within the State concerned;

(d) one non-official to be nominated by each of the participating State Governments to represent the interests of agriculture, fishery or industry or trade in the State concerned or any other interest which, in the opinion of the participating State Government, is to be represented;

(c) two persons to be nominated by the Central Government to represent the companies or corporations owned, controlled or managed by the participating State Governments;

[30][(f) a full-time member-secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects of pollution control, to be appointed by the Central Government.]

(2) A Joint Board constituted in pursuance of an agreement entered into under clause (b) of sub-section (1) of section 13 shall consist of the following members, namely:—

(a) a full-time chairman, being a person having special knowledge or practical experience in respect of [31][matters relating to environmental protection] or a person having knowledge and experience in administering institutions dealing with the matters aforesaid, to be nominated by the Central Government;

(b) two officials to be nominated by the Central Government from the participating Union territory or each of the participating union territories, as the case may be, and two officials to be nominated, from the participating State or each of the participating States, as the case may be by the concerned participating State Government;

(c) one person to be nominated by the Central Government from amongst the members of the local authorities functioning within the participating Union territory or each of the participating Union territories, as the case may be and one person to be nominated, from amongst the members of the local authorities functioning within the participating State or each of the participating States, as the case may be, by the concerned participating State Government;

(d) one non-official to be nominated by the Central Government and one person to be nominated by the participating State Government or State Government to represent the interests of agriculture, fishery or industry or trade in the Union territory or in each of the Union territories or the State or in each of the States, as the case may be, or any other interest which in the opinion of the Central Government or, as the case may be, of the State Government is to be represented.

(e) two persons to be nominated by the Central Government to represent the companies or corporations owned, controlled or managed by the Central Government and situate in the participating Union territory or territories and two persons to be nominated by the Central Government to represent the companies or corporations owned, controlled or managed by the participating State Governments;

[32][(f) a full-time member-secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects of pollution control, to be appointed by the Central Government.]

(3) When a Joint Board is constituted in pursuance of an agreement under clause (b) of sub-section (1) of section 13, the provisions of sub-section (4) of section 4 shall cease to apply in relation to the Union territory for which the Joint Board is constituted.

(4) Subject to the provisions of sub-section (3), the provisions of sub-section (3) of section 4 and sections 5 to 12 (inclusive) shall apply in relation to the Joint Board and its member-secretary as they apply in relation to a State Board and its member-secretary.

(5) Any reference in this Act to the State Board shall, unless the context otherwise requires, be construed as including a Joint Board.

15. Special Provisions relating to giving of directions.—Notwithstanding anything contained in this Act where any Joint Board is constituted under section 13,—

(a) the Government of the State for which the Joint Board is constituted shall be competent to give any direction under this Act only in cases where such direction relates to a matter within the exclusive territorial jurisdiction of the State;

(b) the Central Government alone shall be competent to give any direction under this Act where such direction relates to a matter within the territorial jurisdiction of two or more States or pertaining to a Union territory.

CHAPTER IV

POWERS AND FUNCTIONS OF BOARDS

16. Functions of Central Board.—(1) Subject to the provisions of this Act, the main function of the Central Board shall be to promote cleanliness of streams and wells in different areas of the States.

(2) In particular and without prejudice to the generality of the foregoing function, the Central Board may perform all or any of the following functions, namely:—

(a) advise the Central Government on any matter concerning the prevention and control of water pollution;

(b) co-ordinate the activities of the State Board and resolve disputes among them;

(c) provide technical assistance and guidance to the State Boards, carry out and sponsor investigations and research relating to problems of water pollution and prevention, control or abatement of water pollution.

(d) plan and organise the training of persons engaged or to be engaged in programmes for the prevention, control or abatement of water pollution on such terms and conditions as the Central Board may specify;

(e) organise through mass media a comprehensive programme regarding the prevention and control of water pollution;

[33][(ee) perform such of the functions of any State Board as may be specified in an order made under sub-section (2) of section 18];

(f) collect, compile and publish technical and statistical data relating to water pollution and the measures devised for its effective prevention and control and prepare manuals, codes or guides relating to treatment and disposal of sewage and trade effluents and disseminate information connected therewith;

(g) lay down, modify or annul, in consultation with the State Government concerned, the standards for a stream or well:
Provided that different standards may be laid down for the same stream or well or for different streams or wells, having regard to the quality of water, flow characteristics of the stream or well and the nature of the use of the water in such stream or well or streams or wells;

(h) plan and cause to be executed a nation-wide programme for the prevention, control or abatement of water pollution;

(i) perform such other functions as may be prescribed.

(3) The Board may establish or recognise a laboratory or laboratories to enable the Board to perform its functions under this section efficiently, including the analysis of samples of water from any stream or well or of samples of any sewage or trade effluents.

17 Functions of State Board.—(1) Subject to the provisions of this Act, the functions of a State Board shall be—

(a) to plan a comprehensive programme for the prevention, control or abatement of pollution of streams and wells in the State and to secure the execution thereof;

(b) to advise the State Government on any matter concerning the prevention, control or abatement of water pollution;

(c) to collect and disseminate information relating to water pollution and the prevention, control or abatement thereof;

(d) to encourage, conduct and participate in investigations and research relating to problems of water pollution and prevention, control or abatement of water pollution;

(e) to collaborate with the Central Board in organising the training of persons engaged or to be engaged in programmes relating to prevention, control or abatement of water pollution and to organise mass education programmes relating thereto;

(f) to inspect sewage or trade effluents, works and plants for the treatment of sewage and trade effluents and to review plans, specifications or other data relating to plants set up for the treatment of water, works for the purification thereof and the system for the disposal of sewage or trade effluents or in connection with the grant of any consent as required by this Act;

(g) lay down, modify or annual effluent standards for the sewage and trade effluents and for the quality of receiving waters (not being water in an inter-State stream) resulting from the discharge of effluents and to classify waters of the State;

(h) to evolve economical and reliable methods of treatment of sewage and trade effluents, having regard to the peculiar conditions of soils, climate and water resources of different regions and more especially the prevailing flow characteristics of water in streams and wells which render it impossible to attain even the minimum degree of dilution;

(i) to evolve methods of utilisation of sewage and suitable trade effluents in agriculture;

(j) to evolve efficient methods of disposal of sewage and trade effluents on land, as are necessary on account of the predominant conditions of scant stream flows that do not provide for major part of the year the minimum degree of dilution;

(k) to lay down standards of treatment of sewage and trade effluents to be discharged into any particular stream taking into account the minimum fair weather dilution available in that stream and the tolerance limits of pollution permissible in the water of the stream, after the discharge of such effluents;

- (l) to make, vary or revoke any order—
  - (i) for the prevention, control or abatement of discharges of waste into streams or wells;
  - (ii) requiring any person concerned to construct new systems for the disposal of sewage and trade effluents or to modify, alter or extend any such existing system or to adopt such remedial measures as are necessary to prevent control or abate water pollution;
- (m) to lay down effluent standards to be complied with by persons while causing discharge of sewage or sullage or both and to lay down, modify or annual effluent standards for the sewage and trade effluents;
- (n) to advise the State Government with respect to the location of any industry the carrying on of which is likely to pollute a stream or well;
- (o) to perform such other functions as may be prescribed or as may, from time to time be entrusted to it by the Central Board or the State Government.

(2) The Board may establish or recognise a laboratory or laboratories to enable the Board to perform its functions under this section efficiently, including the analysis of samples of water from any stream or well or of samples of any sewage or trade effluents.

18. Powers to give directions.—[34][(1)] In the performance of its functions under this Act—

- (a) the Central Board shall be bound by such directions in writing as the Central Government may give to it; and
- (b) every State Board shall be bound by such directions in writing as the Central Board or the State Government may give to it:

Provided that where a direction given by the State Government is inconsistent with the direction given by the Central Board, the matter shall be referred to the Central Government for its decision.

[35][(2) Where the Central Government is of the opinion that and State Board has defaulted in complying with any directions given by the Central Board under sub-section (1) and as a result of such default a grave emergency has arisen and it is necessary or expedient so to do in the public interest, it may, by order, direct the Central Board to perform any of the functions of the State Board in relation to such area for such period and for such purposes, as may be specified in the order.

(3) Where the Central Board performs any of the functions of the

State Board in pursuance of a direction under sub-section (2), the expenses, if any, incurred by the Central Board with respect to performance of such functions may, if the State Board is empowered to recover such expenses, be recovered by the Central Board with interest (at such reasonable rate as the Central Government may, by order, fix) from the date when a demand for such expenses is made until it is paid from the person or persons concerned as arrears of land revenue or of public demand.

(4) For the removal of doubts, it is hereby declared that any directions to perform the functions of any State Board given under sub-section (2) in respect of any area would not preclude the State Board from performing such functions in any other area in the State or any of its other functions in that area.]

CHAPTER V

PREVENTION AND CONTROL OF WATER POLLUTION

19. Power of State Government to restrict the application of the Act to certain areas.—(1) Notwithstanding contained in this Act, if the State Government, after consultation with, or on the recommendation of, the State Board, is of opinion that the provisions of this Act need not apply to the entire State, it may, by notification in the Official Gazette, restrict the application of this Act to such area or areas as may be declared therein as water pollution, prevention and control area or areas and thereupon the provisions of this Act shall apply only to such area or areas.

(2) Each water pollution, prevention and control area may be declared either by reference to a map or by reference to the line of any watershed or the boundary of any district or partly by one method and partly by another.

(3) The State Government may, by notification in the Official Gazette,—

(a) alter any water pollution, prevention and control area whether by way of extension or reduction; or

(b) define a new water pollution, prevention and control area in which may be merged one or more water pollution, prevention and control areas, or any part or parts thereof.

20. Power to obtain information.—(1) For the purpose of enabling a State Board to perform the function conferred on it by or under this Act, the State Board or any officer empowered by it in that behalf, may make surveys of any area and gauge and keep records of the flow or volume and other characteristics of a stream or well in such area, and may take steps for the measurement and recording of the rainfall in such area or any part thereof and for the installation and maintenance for those purposes of gauges or other apparatus and works connected therewith, and carry out stream surveys and may take such other steps as may be necessary in order to obtain any information required for the purposes aforesaid.

(2) A State Board may give directions requiring any person who in its opinion is abstracting water from any such stream or well in the area in quantities which are substantial in relation to the flow or volume of that stream or well or is discharging sewage or trade effluent into any such stream or well, to give such information as to the abstraction or the discharge at such times and in such form as may be specified in the directions.

(3) Without prejudice to the provisions of sub-section (2), a State Board may, with a view to preventing or controlling pollution of water, give directions requiring any person in charge of any establishment where any [36][industry, operation or process, or treatment and disposal system] is carried on, to furnish to it information regarding the construction, installation or operation of such establishment or of any disposal system or of any extension or addition thereto in such establishment and such other particulars as may be prescribed.

21. Power to take samples of effluents and procedure to be followed in connection therewith.—(1) A State Board or any officer empowered by it in this behalf shall have power to take for the purpose of analysis samples of water from any stream or well or samples of any sewage or trade effluent which is passing from any plant or vessel or from or over any place into any such stream or well.

(2) The result of any analysis of a sample of any sewage or trade effluent taken under sub-section (1) shall not be admissible in evidence in a legal proceeding unless the provisions of sub-sections (3), (4) and (5) are complied with.

(3) Subject to the provisions of sub-sections (4) and (5), when a sample (composite or otherwise as may be warranted by the process used) of any sewage or trade effluent is taken for analysis under sub-section (1) the person taking the sample shall—

(a) serve on the person in charge of, or having control over, the plant or vessel or in occupation of the place (which person is hereinafter referred to as the occupier) or any agent of such occupier, a notice, then and there in such form as may be prescribed of his intention to have it so analysed;

(b) in the presence of the occupier or his agent, divide the sample into two parts;

(c) cause each part to be placed in a container which shall be marked and sealed and shall also be signed both by the person taking the sample and the occupier or his agent;

(d) send one container forthwith,—

  (i) in a case where such sample is taken from any area situated in a Union territory, to the laboratory established or recognised by the Central Board under section 16; and

  (ii) in any other case, to the laboratory established or recognised by the State Board under section 17;

(e) on the request of the occupier or his agent, send the second container,—

  (i) in a case where such sample is taken from any area situated in a Union territory, to the laboratory established or specified under sub-section (1) of section 51; and

  (ii) in an other case, to the laboratory established or specified under sub-section (1) of section 52.

[37][(4) When a sample of any sewage or trade effluent is taken for analysis under sub-section (1) and the person taking the sample serves on the occupier or his agent, a notice under clause (a) of sub-section (3) and the occupier or his agent wilfully absents himself, then,—

(a) the sample so taken shall be placed in a container which shall be marked and sealed and shall also be signed by the person taking the sample and the same shall be sent forthwith by such person for analysis to the laboratory referred to in sub-clause (i) or sub-clause (ii), as the case may be, of clause (e) of sub-section (3) and such person shall inform the Government analyst appointed under sub-section (1) or sub-section (2), as the case may be, of section 53, in writing about the wilful absence of the occupier or his agent; and

(b) the cost incurred in getting such sample analysed shall be payable by the occupier or his agent and in case of default of such payment, the same shall be recoverable from the occupier or his agent, as the case may be, as an arrear of land revenue or of public demand:

Provided that no such recovery shall be made unless the occupier, or, as the case may be, his agent has been given a reasonable opportunity of being heard in the matter.]

(5) When a sample of any sewage or trade effluent is taken for analysis under sub-section (1) and the person taking the sample serves on the occupier or his agent a notice under clause (a) of sub-section (3) and the occupier or his agent who is present at the time of taking the sample does not make a request for dividing the sample into two parts as provided in clause (b) of sub-section (3), then, the sample so taken shall be placed in a container which shall be marked and sealed and shall also be signed by the person taking the sample and the same be sent forthwith by such person for analysis to the laboratory referred to in sub-clause (i) or sub-clause (ii), as the case may be, of clause (d) of sub-section (3).

22. Reports of the results of analysis on samples taken under section 21.—(1) Where a sample of any sewage or trade effluent has been sent for analysis to the laboratory established or recognised by the Central Board or, as the case may be, the State Board, the concerned Board analyst appointed under sub-section (3) of section 53 shall analyse the sample and submit a report in the prescribed form of the result of such analysis in triplicate to the Central Board or the State Board, as the case may be.

(2) On receipt of the report under sub-section (1), one copy of the report shall be sent by the Central Board or the State Board, as the case may be, to the occupier or his agent referred to in section 21, another copy shall be preserved for production before the court in case any legal proceedings are taken against him and the other copy shall be kept by the concerned Board.

(3) Where a sample has been sent for analysis under clause (e) of sub-section (3) or sub-section (4) of section 21 to any laboratory mentioned therein, the Government analyst referred to in that sub-section shall analyse the sample and submit a report in the prescribed form of the result of the analysis in triplicate to the Central Board or, as the case may be, the State Board which shall comply with the provisions of sub-section (2).

(4) If there is any inconsistency or discrepancy between, or variation in the results of, the analysis carried out by the laboratory established or recognised by the Central Board or the State Board, as the case may be, and that of the laboratory established or specified under section 51 or section 52, as the case may be, the report of the latter shall prevail.

(5) Any cost incurred in getting any sample analysed at the request of the occupier or his agent shall be payable by such occupier or his agent and in case of default the same shall be recoverable from him as arrears of land revenue or of public demand.

23. Power of entry and inspection.—(1) Subject to the provisions of this section, any person empowered by a State Board in this behalf shall have a right at any time to enter, with such assistance as he considers necessary, any place—

(a) for the purpose of performing any of the functions of the Board entrusted to him;

(b) for the purpose of determining whether and if so in what manner, any such functions are to be performed or whether any provisions of this Act or the rules made thereunder of a notice, order, direction or authorisation served, made, given, or granted under this Act is being or has been complied with;

(c) for the purpose of examining any plant, record, register, document or any other material object or for conducting a search of any place in which he has reason to believe that an offence under this Act or the rules made thereunder has been or is being or is about to be committed and for seizing any such plant, record, register, document or other material object, if he has reason to believe that it may furnish evidence of the commission of an offence punishable under this Act or the rules made thereunder:

Provided that the right to enter under this sub-section for the inspection of a well shall be exercised only at reasonable hours in a case where such well is situated in any premises used for residential purposes and the water thereof is used exclusively for domestic purposes.

(2) The provisions of [38][the Code of Criminal Procedure, 1973], or, in relation to the State of Jammu and Kashmir, the provisions of any corresponding law in force in that State, shall, so far as may be, apply to any search or seizure under this section as they apply to any search or seizure made under the authority of a warrant issued under [39][section 94] of the said Code, or, as the case may be, under the corresponding provisions of the said law.

Explanation.—For the purposes of this section, "place" includes vessel.

24. Prohibition on use of stream or well for disposal of polluting matter, etc.—(1) Subject to the provisions of this section,—

(a) no person shall knowingly cause or permit any poisonous, noxious or polluting matter determined in accordance with such standards as may be laid down by the State Board to enter (whether directly or indirectly) into any [40][stream or well or sewer or on land]; or

(b) no person shall knowingly cause or permit to enter into any stream any other matter which may tend, either directly or in combination with similar matters, to impede the proper flow of the water of the stream in a manner leading or likely to lead to a substantial aggravation of pollution due to other causes or of its consequences.

(2) A person shall not be guilty of an offence under sub-section (1), by reason only of having done or caused to be done any of the following acts, namely:—

(a) constructing, improving or maintaining in or across or on the bank or bed of any stream any building, bridge, weir, dam, sluice, dock, pier, drain or sewer or other permanent works which he has a right to construct, improve or maintain;

(b) depositing any materials on the bank or in the bed of any stream for the purpose of reclaiming land or for supporting, repairing or protecting the bank or bed of such stream provided such materials are not capable of polluting such stream;

(c) putting into a stream any sand or gravel or other natural deposit which has flowed from or been deposited by the current of such stream;

(d) causing or permitting, with the consent of the State Board, the deposit accumulated in a well, pond or reservoir to enter into any stream.

(3) The State Government may, after consultation with, or on the recommendation of, the State Board, exempt, by notification in the Official Gazette, any person from the operation of sub-section (1) subject to such conditions, if any, as may be specified in the notification and any condition so specified may be a like notification and be altered, varied or amended.

25. Restrictions on new outlets and new discharges.—[41][(1) Subject to the provisions of this section, no person shall, without the previous consent of the State Board,—

(a) establish or take any steps to establish any industry, operation or process, or any treatment and disposal system or an extension or addition thereto, which is likely to discharge sewage or trade effluent into a stream or well or sewer or on land (such discharge being hereafter in this section referred to as discharge of sewage); or

(b) bring into use any new or altered outlets for the discharge of sewage; or

(c) begin to make any new discharge of sewage:

Provided that a person in the process of taking any steps to establish any industry, operation or process immediately before the commencement of the Water (Prevention and Control of Pollution) Amendment Act, 1988, for which no consent was necessary prior to such commencement, may continue to do so for a period of three months from such commencement or, if he has made an application for such consent, within the said period of three months, till the disposal of such application,

(2) An application for consent of the State Board under sub-section (1) shall be made in such form, contain such particulars and shall be accompanied by such fees as may be prescribed.]

(3) The State Board may make such inquiry as it may deem fit in respect of the application for consent referred to in sub-section (1) and in making any such inquiry shall follow such procedure as may be prescribed.

[42][(4) The State Board may—

(a) grant its consent referred to in sub-section (1), subject to such conditions as it may impose, being—

  (i) in cases referred to in clauses (a) and (b) of sub-section (1) of section 25, conditions as to the point of discharge of sewage or as to the use of that outlet or any other outlet for discharge or sewage;

  (ii) in case of a new discharge, conditions as to the nature and composition, temperature, volume or rate of discharge of the effluent from the land or premises from which the discharge or new discharge is to be made; and

  (iii) that the consent will be valid only for such period as may be specified in the order,

and any such conditions imposed shall be binding on any person establishing or taking any steps to establish any industry, operation or process, or treatment and disposal system or extension or addition thereto, or using the new or altered outlet, or discharging the effluent from the land or premises aforesaid; or

(b) refuse such consent for reasons to be recorded in writing.

(5) Where, without the consent of the State Board, any industry, operation or process, or any treatment and disposal system or any extension or addition thereto, is established, or any steps for such establishment have been taken or a new or altered outlet is brought into use for the

discharge of sewage or a new discharge of sewage is made, the State Board may serve on the person who has established or taken steps to establish any industry, operation or process, or any treatment and disposal system or any extension or addition thereto, or using the outlet, or making the discharge, as the case may be, a notice imposing any such conditions as it might have imposed on an application for its consent in respect of such establishment, such outlet or discharge.

(6) Every State Board shall maintain a register containing particulars of conditions imposed under this section and so much of the register as relates to any outlet, or to any effluent, from any land or premises shall be open to inspection at all reasonable hours by any person interested in, or affected by such outlet, land or premises, as the case may be, or by any person authorised by him in this behalf and the condition so contained in such register shall be conclusive proof that the consent was granted subject to such conditions.]

(7) The consent referred to in sub-section (1) shall, unless given or refused earlier, be deemed to have been given unconditionally on the expiry of a period of four months of the making of an application in this behalf complete in all respects to the State Board.

(8) For the purposes of this section and sections 27 and 30,—

(a) the expression "new or altered outlet" means any outlet which is wholly or partly constructed on or after the commencement of this Act of which (whether so constructed or not) is substantially altered after such commencement;

(b) the expression "new discharge" means a discharge which is not, as respects the nature and composition, temperature, volume, and rate of discharge of the effluent substantially a continuation of a discharge made within the preceding twelve months (whether by the same or different outlet), so however that a discharge which is in other respects a continuation of previous discharge made as aforesaid shall not be deemed to be a new discharge by reason of any reduction of the temperature or volume or rate of discharge of the effluent as compared with the previous discharge.

26. Provision regarding existing discharge of sewage or trade effluent.—Where immediately before the commencement of this Act any person was discharging any sewage or trade effluent into a [43][stream or well or sewer or on land], the provisions of section 25 shall, so far as may be, apply in relation to such person as they apply in relation to the person referred to in that section subject to the modification that the application for consent to be made under sub-section (2) of that section [44][shall be made on or before such date as may be specified by the State Government by notification in this behalf in the Official Gazette].

27. Refusal or withdrawal of consent by State Board.—[45][(1) A State Board shall not grant its consent under sub-section (4) of section 25 for the establishment of any industry, operation or process, or treatment and disposal system or extension or addition thereto, or to the bring into use of a new or altered outlet unless the industry, operation or process, or treatment and disposal system or extension or addition thereto, or the outlet is so established as to comply with conditions imposed by the Board to enable it to exercise its right to take samples of the effluent.

[46][(2) A State Board may from time to time review—

[47][(a) any condition imposed under section 25 or section 26 and may serve on the person to whom a consent under section 25 or section 26 is granted a notice making any reasonable variation of or revoking any such condition;

(b) the refusal of any consent referred to in sub-section (1) of section 25 or section 26 or the grant of such consent without any condition, and may make such orders as it deemed fit.]

(3) Any conditions imposed under section 25 or section 26 shall be subject to any variation made under sub-section (2) and shall continue in force until revoked under that sub-section.

28. Appeals,—(1) Any person aggrieved by an order made by the State Board under section 25, section 26 or section 27 may within thirty days from the date on which the order is communicated to him, prefer an appeal to such authority (hereinafter referred to as the appellate authority) as the State Government may think fit to constitute:

Provided that the appellate authority may entertain the appeal after the expiry of the said period of thirty days if such authority is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.

[48][(2) An appellate authority shall consist of a single person or three persons as the State Government may think fit, to be appointed by that Government.]

(3) The form and manner in which an appeal may be preferred under sub-section (1), the fees payable for such appeal and the procedure to be followed by the appellate authority shall be such as may be prescribed.

(4) On receipt of an appeal preferred under sub-section (1), the appellate authority shall, after giving the appellant and the State Board an opportunity of being heard, dispose of the appeal as expeditiously as

possible.

(5) If the appellate authority determines that any condition imposed, or the variation of any condition, as the case may be, was unreasonable, then,—

(a) where the appeal is in respect of the unreasonableness of any condition imposed, such authority may direct either that the condition shall be treated as annulled or that there shall be substituted for it such condition as appears to it to be reasonable ;

(b) where the appeal is in respect of the unreasonableness of any variation of a condition, such authority may direct either that the condition shall be treated as continuing in force unvaried or that it shall be varied in such manner as appears to it to be reasonable.

29. Revision.—(1) The State Government may at any time either of its own motion or on an application made to it in this behalf, call for the records of any case where an order has been made by the State Board under section 25, section 26 or section 27 for the purpose of satisfying itself as to the legality or propriety of any such order and may pass such order in relation thereto as it may think fit:

Provided that the State Government shall not pass any order under this sub-section without affording the State Board and the person who may be affected by such order a reasonable opportunity of being heard in the matter.

(2) The State Government shall not revise any order made under section 25, section 26 or section 27 where an appeal against that order lies to the appellate authority, but has not been preferred or where an appeal has been preferred such appeal is pending before the appellate authority.

30. Power of State Board to carry out certain works.—[49][(1) Where under this Act, any conditions have been imposed on any person while granting consent under section 25 of section 26 and such conditions require such person to execute any work in connection therewith and such work has not been executed within such time as may be specified in this behalf, the State Board may serve on the person concerned a notice requiring him within such time (not being less than thirty days) as may be specified in the notice to execute the work specified therein.]

(2) If the person concerned fails to execute the work as required in the notice referred to in sub-section (1), then, after the expiration of the time specified in the said notice, the State Board may itself execute or

cause to be executed such work.

(3) All expenses incurred by the State Board for the execution of the aforesaid work, together with interest, at such rate as the State Government may, by order, fix, from the date when a demand for the expenses is made until it is paid, may be recovered by that Board from the person concerned, as arrears of land revenue, or of public demand.

31. Furnishing of information to State Board and other agencies in certain cases.—[50][(1) If at any place where any industry, operation or process, or any treatment and disposal system or any extension or addition thereto is being carried on, due to accident or other unforeseen act or event, any poisonous, noxious or polluting matter is being discharged, or is likely to be discharged into a stream or well or sewer or on land and, as a result of such discharge, the water in any stream or well is being polluted, or is likely to be polluted, then the person incharge of such place shall forthwith intimate the occurrence of such accident, at or event to the State Board and such other authorities or agencies as may be prescribed.]

(2) Where any local authority operates any sewerage system or sewage works the provisions of sub-section (1) shall apply to such local authority as they apply in relation to the person in charge of the place where an industry or trade is being carried on.

32. Emergency measures in case of pollution of stream or well.—(1) Where it appears to the State Board that any poisonous, noxious or polluting matter is present in[51] [any stream or well or on land by reason of the discharge of such matter in such stream or well or on such land] or has entered into that stream or well due to any accident or other unforeseen act or event, and if the Board is of opinion that it is necessary or expedient to take immediate action, it may for reasons to be recorded in writing, carry out such operations as it may consider necessary for all or any of the following purposes, that is to say,—

(a) removing that matter from the [52][stream or well or on land] and disposing it of in such manner as the Board considers appropriate;

(b) remedying or mitigating any pollution caused by its presence in the stream or well;

(c) issuing orders immediately restraining or prohibiting the persons concerned from discharging any poisonous, noxious or polluting matter [53][into the stream or well or on land] or from making insanitary use of the stream or well.

(2) The power conferred by sub-section (1) does not include the

power to construct any works other than works of a temporary character which are removed on or before the completion of the operations.

33. Power of Board to make application to courts for restraining apprehended pollution of water in streams or wells.—[54][(1) Where it is apprehended by a Board that the water in any stream or well is likely to be polluted by reason of the disposal or likely disposal of any matter in such stream or well or in any sewer, or on any land, or otherwise, the Board may make an application to a court, not inferior to that of a Metropolitan Magistrate or a Judicial Magistrate of the first class, for restraining the person who is likely to cause such pollution from so causing.]

(2) On receipt of an application under sub-section (1) the court make such order as it deems fit.

(3) Where under sub-section (2) the court makes an order restraining any person from polluting the water in any stream or well, it may in that order—

(i) direct the person who is likely to cause or has caused the pollution of the water in the stream or well, to desist from taking such action as is likely to cause pollution or, as the case may be, to remove such stream or well, such matter, and

(ii) authorise the Board, if the direction under clause (i) (being a direction for the removal of any matter from such stream or well) is not complied with by the person to whom such direction is issued, to undertake the removal and disposal of the matter in such manner as may be specified by the court.

(4) All expenses incurred by the Board in removing any matter in pursuance of the authorisation under clause (ii) of sub-section (3) or in the disposal of any such matter may be defrayed out of any money obtained by the Board from such disposal and any balance outstanding shall be recoverable from the person concerned as arrears of land revenue or of public demand.

[55][**33A. Power to give directions.**—Notwithstanding anything contained in any other law, but subject to the provisions of this Act, and to any directions that the Central Government may give in this behalf, a Board may, in the exercise of its powers and performance of its functions under this Act, issue any directions in writing to any person, officer or authority, and such person, officer or authority shall be bound to comply with such directions.

Explanation.—For avoidance of doubts, it is hereby declared that the power to issue directions under this section includes the power to direct—

(a) the closure, prohibition or regulation of any industry, operation or process; or

(b) the stoppage or regulation of supply of electricity, water or any other service.]

CHAPTER VI

FUNDS, ACCOUNTS AND AUDIT

34. Contributions by Central Government.—The Central Government may, after due appropriation made by Parliament by law in this behalf, make in each financial year such contributions to the Central Board as it may think necessary to enable the Board to perform its functions under this Act.

35. Contributions by State Government.—The State Government may, after due appropriation made by the Legislature of the State by law in this behalf, make in each financial year such contributions to the State Board as it may think necessary to enable that Board to perform its functions under this Act.

36. Fund of Central Board.—(1) The Central Board shall have its own fund, and all sums which may, from time to time, be paid to it by the Central Government and all other receipts (by way of gifts, grants, donations, benefactions) [55][fees] or (otherwise) of that Board shall be carried to the fund of the Board and all payments by the Board shall be made therefrom.

(2) The Central Board may expend such sums as it thinks fit for performing its functions under this Act, [56][and, where any law for the time being in force relating to the prevention, control of abatement or air pollution provides for the performance of any function under such law by the Central Board, also for performing its functions under such law] and such sums shall be treated as expenditure payable out of the funds of that Board.

37. Fund of State Board.—(1) The State Board shall have its own fund, and the sums which may, from time to time, be paid to it by the State Government and all other receipts (by way of gifts, grants, donations, benefactions) [57][fees] or (otherwise) of that Board shall be carried to the fund of the Board and all payments by the Board shall be made therefrom.

(2) The State Board may expend such sums as it thinks fit for per-

forming its functions under this Act, [57][and, where any law for the time being in force relating to the prevention, control of abatement of air pollution provides for the performance of any function under such law by the State Board, also for performing its functions under such law] and such sums shall be treated as expenditure payable out of the funds of that Board.

[58][**37A. Borrowing Powers of Board.**—A Board may, with the consent of, or in accordance with, the terms of any general or special authority given to it by the Central Government or, as the case may be, the State Government, borrow money from any source by way of loans or issue of bonds debentures or such other instruments, as it may deem fit, for the performance of all or any of its functions under this Act.]

38. Budget.—The Central Board or, as the case may be, the State Board shall, during each financial year, prepare, in such form and at such time as may be prescribed, a budget in respect of the financial year next ensuing showing the estimated receipt and expenditure, and copies thereof shall be forwarded to the Central Government, or as the case may be, the State Government.

[59][**39. Annual report.**—(1) The Central Board shall, during each financial year, prepare, in such form as may be prescribed, an annual report giving full account of its activities under this Act during the previous financial year and copies thereof shall be forwarded to the Central Government within four months from the last date of the previous financial year and that Government shall cause every such report to be laid before both Houses of Parliament within nine months from the last date of the previous financial year.

(2) Every State Board shall, during each financial year, prepare, in such form as may be prescribed, an annual report giving full account of its activities under this Act during the previous financial year and copies thereof shall be forwarded to the State Government within four months from the last date of the previous financial year and that Government shall cause every such report to be laid before the State legislature within a period of nine months from the last date of the previous financial year.]

40. Account and audit.—(1) Every Board shall maintain proper accounts and other relevant records and prepare an annual statement of accounts in such form as may be prescribed by the Central Government or, as the case may be, the State Government.

(2) The accounts of the Board shall be audited by an auditor duly qualified to act as an auditor of companies under section 226 of the Companies Act, 1956.

(3) The said auditor shall be appointed by the Central Government or, as the case may be, the State Government on the advice of the Comptroller and Auditor-General of India.

(4) Every auditor appointed to audit the accounts of the Board under this Act shall have the right to demand the production of books, accounts, connected vouchers and other documents and papers and to inspect any of the offices of the Board.

(5) Every such auditor shall send a copy of his report together with an audited copy of the accounts to the Central Government or, as the case may be, the State Government.

(6) The Central Government shall, as soon as may be after the receipt of the audit report under sub-section (5), cause the same to be laid before both Houses of Parliament.

(7) The State Government shall, as soon as may be after the receipt of the audit report under sub-section (5), cause the same to be laid before the State Legislature.

CHAPTER VII

PENALTIES AND PROCEDURE

[60]["**41. Failure to comply with directions under sub-section (2) of sub-section (3) of section 20, or orders issued under clause (c) of sub-section (1) of section 32 or directions issued under sub-section (2) of section 33 or section 33A.**—(1) Whoever fails to comply with any direction given under sub-section (2) or sub-section (3) of section 20 within such time as may be specified in the direction shall, on conviction, be punishable with imprisonment for a term which may extend to three months or with fine which may extend to ten thousand rupees or with both and in case the failure continues, with an additional fine which may extend to five thousand rupees for every day during which such failure continues after the conviction for the first such failure.

(2) Whoever fails to comply with any order issued under clause (c) of sub-section (1) of section 32 or any direction issued by a court under sub-section (2) of section 33 or any direction issued under section 33A shall, in respect of each such failure and on conviction, be punishable with imprisonment for a term which shall not be less than one year and six months but which may extend to six year and with fine, in case the failure continues, with an additional fine which may extend to five thousand rupees for every day during which such failure continues after the

conviction for the first such failure.

(3) If the failure referred to in sub-section (2) continues beyond a period of one year after the date of conviction, the offender shall, on conviction, be punishable with imprisonment for a term which shall not be less than two years but which may extend to seven years and with fine.]

42. Penalty for certain acts.—(1) Whoever—

(a) destroys, pulls down, removes, injures or defaces any pillar, post or stake fixed in the ground or any notice or other matter put up, inscribed or placed, by or under the authority of the Board, or

(b) obstructs any person acting under the orders or directions of the Board from exercising his powers and performing his functions under this Act, or

(c) damages any works or property belonging to the Board, or

(d) fails to furnish to any officer or other employee of the Board any information required by him for the purpose of this Act, or

(e) fails to intimate the occurrence of an accident or other unforeseen act or event under section 31 to the Board and other authorities or agencies as required by that section, or

(f) in giving any information which he is required to give under this Act, knowingly or willfully makes a statement which is false in any material particular, or

(g) for the purpose of obtaining any consent under section 25 or section 26, knowingly or willfully makes a statement which is false in any material particular,

shall be punishable with imprisonment for a term which may extend to three months or with fine which may extend to [61][ten thousand rupees] or with both.

(2) Where for the grant of a consent in pursuance of the provisions of section 25 or section 26 the use of a meter or gauge or other measure or monitoring device is required and such device is used for the purposes of those provisions, any person who knowingly or willfully alters or interferes with that device so as to prevent it from monitoring or measuring correctly shall be punishable with imprisonment for a term which may extend to three months or with fine which may extend to [61][ten thousand rupees] or with both.

43. Penalty for contravention of provisions of section 24.—Whoever contravenes the provisions of section 24 shall be punishable with imprisonment for a term which shall not be less than [62][one year and six months] but which may extend to six years and with fine.

44. Penalty for contravention of section 25 or section 26.— Whoever contravenes the provision of section 25 or section 26 shall be punishable with imprisonment for a term which shall not be less than [63][two years] but which may extend to six years and with fine.

45. Enhanced penalty after previous conviction.—If any person who has been convicted of any offence under section 24 or 25 or section 26 is again found guilty of an offence involving a contravention of the same provision, he shall, on the second and on every subsequent conviction, be punishable with imprisonment for a term which shall not be less than [62][two years] but which may extend to seven years and with fine:

Provided that for the purpose of this section no cognizance shall be taken of any conviction made more than two years before the commission of the offence which is being punished.

[64][**45A. Penalty for contravention of certain provisions of the Act.**—Whoever contravenes any of the provisions of this Act or fails to comply with any order or direction given under this Act, for which no penalty has been elsewhere provided in this Act, shall be punishable with imprisonment which may extend to three months or with fine which may extend to ten thousand rupees or with both and in the case of a continuing contravention or failure, with an additional fine which may extend to five thousand rupees for every day during which such contravention of failure.]

46. Publication of names of offenders.—If any person convicted of an offence under this Act commits a like offence afterwards it shall be lawful for the court before which the second or subsequent conviction takes place to cause the offender's name and place of residence, the offence and the penalty imposed to be published at the offender's expense in such newspapers or in such other manner as the court may direct and the expenses of such publication shall be deemed to be part of the cost attending the conviction and shall be recoverable in the same manner as a fine.

47. Offences by companies.—(1) Where an offence under this Act has been committed by a company, every person who at the time the offence was committed was in charge of, and was responsible to the company for the conduct of, the business of the company, as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this sub-section shall render any such person liable to any punishment provided in this Act if he proves that the offence was committed without his knowledge for that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any director, manager, secretary or other officer of the company, such director, manager, secretary or other officer of the company, such director, manager, secretary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

Explanation.—For the purpose of this section.—

(a) "company" means any body corporate, and includes a firm or other association of individuals; and

(b) "director" in relation to a firm means a partner in the firm.

48. Offences by Government Departments.—Where an offence under this Act has been committed by any Department of Government, the Head of the Department shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this section shall render such Head of the Department liable to any punishment if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

49. Cognizance of offences.—[65][(1) No court shall take cognizance of any offence under this Act except on a complaint made by—

(a) a Board or any officer authorised in this behalf by it; or

(b) any person who has given notice of not less than sixty days, in the manner prescribed, of the alleged offence and of his intention to make a complaint, to the Board or officer authorised as aforesaid,

and no court inferior to that of a Metropolitan Magistrate or a Judicial Magistrate of the first class shall try any offence punishable under this Act.]

[66][(2) Where a complaint has been made under clause (b) of sub-section (1), the Board shall, on demand by such person, make available the relevant reports in its possession to that person:

Provided that the Board may refuse to make any such report available to such person if the same is, in its opinion, against the public interest,]

[67][(3) Notwithstanding anything contained in section 29 of the Code

of Criminal Procedure, 1973"], it shall be lawful for any [68][Judicial Magistrate of the first class or for any Metropolitan Magistrate"] to pass a sentence of imprisonment for a term exceeding two years or of fine exceeding two thousand rupees on any person convicted of an offence punishable under this Act.

50. Members, officers and servants of Board to be public servants.—All members, officers and servants of a Board when acting or purporting to act in pursuance of any of the provisions of this Act (45 of 1860) and the rules made thereunder shall be deemed to be public servants within the meaning of section 21 of the Indian Penal Code.

CHAPTER VIII

MISCELLANEOUS

51. Central Water Laboratory.—(1) The Central Government may, by notification in the Official Gazette,—

(a) establish a Central Water Laboratory; or

(b) specify any laboratory or institute as a Central Water Laboratory, to carry out the functions entrusted to the Central Water Laboratory under this Act.

(2) The Central Government may, after consultation with the Central Board, make rules prescribing—

(a) the functions of the Central Water Laboratory;

(b) the procedure for the submission to the said laboratory of samples of water or of sewage or trade effluent for analysis or tests, the form of the laboratory's report thereunder and the fees payable in respect of such report;

(c) such other matters as may be necessary or expedient to enable that laboratory to carry out its functions.

52. State Water Laboratory.—(1) The State Government may, by notification in the Official Gazettee,—

(a) establish a State Water Laboratory; or

(b) specify any State laboratory or institute as a State Water Laboratory, to carry out the functions entrusted to the State Water Laboratory under this Act.

(2) The State Government may, after consultation with the State Board, make rules prescribing—

(a) the functions of the State Water Laboratory;

(b) the procedure for the submission to the said laboratory of samples of water or of sewage or trade effluent for analysis or tests, the form of the laboratory's report thereon and the fees payable in respect of such report;

(c) such other matters as may be necessary or expedient to enable that laboratory to carry out its functions.

53. Analysts.—(1) Central Government may, by notification in the Official Gazettee appoint such persons as it thinks fit and having the prescribed qualifications to be Government analysts for the purpose of analysis of samples of water or of sewage or trade effluent sent for analysis to any laboratory established or specified under sub-section (1) of section 51.

(2) The State Government may, by notification in the Official Gazette, appoint such persons as it thinks fit and having the prescribed qualifications to be Government analysts for the purpose of analysis of water or of sewage or trade effluent sent for analysis to any laboratory established or specified under sub-section (1) of section 52.

(3) Without prejudice to the provisions of sub-section (3) of section 12, the Central Board or, as the case may be, the State Board may, by notification in the Official Gazette, and with the approval of the Central Government or the State Government, as the case may be, appoint such persons as it thinks fit and having the prescribed qualifications to be Board analysts for the purpose of analysis of samples of water or of sewage or trade effluent sent for analysis to any laboratory established or recognised under section 16, as the case may be, under section 17.

54. Reports of analysts.—Any document purporting to be report signed by a Government analysts or, as the case may be, a Board analyst may be used as evidence of the facts stated therein in any proceeding under this Act.

55. Local authorities to assist.—All local authorities shall render such help and assistance and furnish such information to the Board as it may require for the discharge of its functions, and shall make available to the Board for inspection and examination such records, maps, plans and other documents as may be necessary for the discharge of its functions.

56. Compulsory acquisition of land for the State Board.—Any land required by a State Board for the efficient performance of its function under this Act shall be deemed to be needed for a public purpose and such land shall be acquired for the State Board under the provisions of the Land Acquisition Act, 1894 (1 of 1984), or under any other corresponding law for the time being in force.

57. Returns and reports.—The Central Board shall furnish to the Central Government, and a State Board shall furnish to the State Government and to the Central Board such reports, returns, statistics, accounts and other information with respect to its fund or activities as that government, or, as the case may be, the Central Board may, from time to time, require.

58. Bar of jurisdiction.—No civil court shall have jurisdiction to entertain any suit or proceeding in respect of any matter which an appellate authority constituted under this Act is empowered by or under this Act to determine, and no injunction shall be granted by any court or other authority in respect of any action taken or to be taken in pursuance of any power conferred by or under this Act.

59. Protection of action taken in good faith.—No suit or other legal proceedings shall lie against the Government or any officer of Government or any member or officer of a Board in respect of anything which is in good faith done or intended to be done in pursuance of this Act or the rules made thereunder.

60. Overriding effect.—The provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any enactment other than this Act.

61. Power of Central Government to supersede the Central Board and Joint Boards.—(1) If at any time the Central Government is of opinion—

(a) that the Central Board or any Joint Board has persistently made default in the performance of the functions imposed on it by or under this Act; or

(b) that circumstances exist which render it necessary in the public interest so to do,

the Central Government may, by notification in the Official Gazette, supersede the Central Board or such Joint Board, as the case may be, for such period not exceeding one year, as may be specified in the notification:

Provided that before issuing a notification under this sub-section for the reasons mentioned in clause (a), the Central Government shall give a reasonable opportunity to the Central Board or such Joint Board, as the case may be, to show cause why it should not be superseded and shall consider the explanations and objections if any, of the Central Board or such Joint Board, as the case may be.

(2) Union the publication of notification under sub-section (1) superseding the Central Board or any Joint Board—

(a) all the members shall, as from the date of supersession vacate their offices as such;

(b) all the powers, functions and duties which may, by or under this Act, be exercised, preformed or discharged by the Central Board or such Joint Board, shall, until the Central Board or the Joint Board, as the case may be, is reconstituted under sub-section (3) be exercised, performed or discharged by such person or persons as the Central Government may direct;

(c) all property owned or controlled by the Central Board or such Joint Board shall, until the Central Board or the Joint Board, as the case may be, is reconstituted under sub-section (3) vest in the Central Government.

(3) On the expiration of the period of supersession specified in the notification issued under sub-section (1), the Central Government may—

(a) extend the period of supersession for such further term, not exceeding six months, as it may consider necessary; or

(b) reconstitute the Central Board or the Joint Board, as the case may be, by fresh nomination or appointment, as the case may be, and in such case any person who vacated his office under clause (a) of sub-section (2) shall not be deemed disqualified for nomination or appointment:

Provided that the Central Government may at any time before the expiration of the period of supersession, whether originally specified under sub-section (1) or as extended under this sub-section, take action under clause (b) of this sub-section.

62. Power of State Government to supersede State Board.—(1) It at any time the State Government is of opinion—

(a) that the State Board has persistently made default in the performance of the functions imposed on it by or under this Act; or

(b) that circumstances exist which render it necessary in the public interest so to do,

the State Government may, by notification in the Official Gazette, supersede the State Board for such period, not exceeding one year, as may be specified in the notification:

Provided that before issuing a notification under this sub-section for the reasons mentioned in clause (a), the State Government shall give a reasonable opportunity to the State Board to show cause why it should not be superseded and shall consider the explanations and objections, if any, of the State Board.

(2) Upon the publication of a notification under sub-section (1) su-

perseding the State Board, the provisions of sub-sections (2) and (3) of section 61 shall apply in relation to the supersession of the State Board as they apply in relation to the supersession of the Central Board or a Joint Board by the Central Government.

63. Power of Central Government to make rules.—(1) The Central Government may, simultaneously with the constitution of the Central Board, make rules in respect of the matters specified in sub-section (2):

Provided that when the Central Board has been constituted, no such rule shall be made, varied, amended or repealed without consulting the Board.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely—

(a) the terms and conditions of service of the members (other than the chairman and member-secretary) of the Central Board under sub-section (8) of section 5;

(b) the intervals and the time and place at which meetings of the Central Board or of any committee thereof constituted under this Act, shall be held and the procedure to be followed at such meetings, including the quorum necessary for the transaction of business under section 8, and under sub-section (2) of section 9;

(c) the fees and allowances to be paid to such members of a committee of the Central Board as are not members of the Board under sub-section (3) of section 9;

[69][(d) the manner in which and the purposes for which persons may be associated with the Central Board under sub-section (1) of section (10) and the fees and allowances payable to such persons;]

(e) the terms and conditions of service of the chairman and the member-secretary of the Central Board under sub-section (9) of section 5 and under sub-section (1) of section 12;

(f) conditions subject to which a person may be appointed as a consulting engineer to the Central Board under sub-section (4) of section 12;

(g) the powers and duties to be exercised and performed by the chairman and member-secretary of the Central Board; [70] * * *

(j) the form of the report of the Central Board analyst under sub-section (1) of section 22;

(k) the form of the report of the Government analyst under sub-section (1) of section 22;

[71][(l) the form in which the time within which the budget of the Central Board may be prepared and forwarded to the Central Government under section 38;

(ll) the form in which the annual report of the Central Board may be prepared under section 39;]

(m) the form in which the accounts of the Central Board may be maintained under section 40;

[72][(mm) the manner in which notice of intention to make a complaint shall be given to the Central Board or officer authorised by it under section 49;]

(n) any other matter relating to the Central Board, including the powers and functions of that Board in relation to Union territories;

(o) any other matter which has to be, or may be, prescribed.

(3) Every rule made by the Central Government under this Act shall be laid, as soon as may be after it is made, before each House of Parliament while it is in session for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, [73][before the expiry of the session immediately following the session or the successive sessions aforesaid], both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

64. Power of State Government to make rules.—(1) The State Government may, simultaneously with the constitution of the State Board, make rules to carry out the purposes of this Act in respect of matters not falling within the purview of section 63:

Provided that when the State Board has been constituted, no such rule shall be made, varied, amended or repealed without consulting that Board.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely—

(a) the terms and conditions of service of the members (other than the chairman and the member-secretary) of the State Board under sub-section (8) of section 5;

(b) the time and place of meetings of the State Board or of any committee of that Board constituted under this Act and the procedure to be followed at such meeting, including in quorum necessary for the transaction of business under section 8 and under sub-section (2) of section 9;

(c) the fees and allowances to be paid to such members of a committee of the State Board as are not members of the Board under sub-section (3) of section 9;

(d) the manner in which and the purposes for which persons may be associated with the State Board under sub-section (1) of section 10 [74][and the fees and allowances payable to such persons];

(e) the terms and conditions of service of the chairman and the member-secretary of the State Board under sub-section (9) of section 5 and under sub-section (1) of section 12;

(f) the conditions subject to which a person may be appointed as a consulting engineer to the State Board under sub-section (4) of section 12;

(g) the powers and duties to be exercised and discharged by the chairman and the member-secretary of the State Board;

(h) the form of the notice referred to in section 21;

(i) the form of the report of the State Board analyst under sub-section (3) of section 22.

(j) the form of the report of the Government analyst under sub-section (3) of section 22;

(k) the form of application for the consent of the State Board under sub-section (2) of section 25 and the particular it may contain;

(l) the manner in which inquiry under sub-section (3) of section 25 may be made in respect of an application for obtaining consent of the State Board and the matters to be taken into account in granting or refusing such consent;

(m) the form and manner in which appeals may be filed, the fees payable in respect of such appeals and the procedure to be followed by the appellate authority in disposing of the appeals under sub-section (3) of section 28;

[75][(n) the form in which and the time within which the budget of the State Board may be prepared and forwarded to the State Government under section 38;

(nn) the form in which the annual report of the State Board may be prepared under section 39;]

(o) the form in which the accounts of the State Board may be maintained under sub-section (1) of section 40;

[76][(oo) the manner in which notice of intention to make a complaint shall be given to the State Board or officer authorised by it under section 49;]

(p) any other matter which has to be, or may be, prescribed.

FOOTNOTES

1. Subs. by Act 53 of 1988, s. 2 for cls. (b), (d) and (h).
2. Ins. by Act 44 of 1978, s. 2.
3. Subs. by Act 53 of 1988, s. 2, for "trade or industry".
4. Ins. by Act 44 of 1978, s. 2.
5. Subs. by Act 53 of 1988, s. 2, for cls. (b) (d) and (h).
6. Subs. by Act 53 of 1988, s. 2, for "trade or industry".
7. Subs. by Act 53 of 1988, s. 3, for Certain words.
8. Subs. by Act 44 of 1978, s. 3 for Certain words.
9. Subs. by s. 3, *ibid*, for "five officials".
10. Subs. by s. 3, *Ibid.*, for "three non-officials".
11. Subs. by Act 53 of 1988, s. 3, for cl. (f).
12. Certain words omitted by Act 44 of 1978, s. 4.
13. Subs. by Act 53 of 1988, s. 4, for "State Board".
14. The world "full-time" omitted by Act 44 of 1978, s. 4.
15. Subs. by 4, *ibid.*, for certain words.
16. Ins. by s. 4, *ibid.*
17. Subs. by s. 4, *ibid.*, for "five officials".
18. Subs. by 4, *ibid.*, for "five persons".
19. Subs. by Act 44 of 1978, s. 4, for "three non-officials".
20. Subs. by Act 53 of 1988, s. 4, for cl. (f).
21. Subs. by Act 44 of 1978, s. 5, for sub-section (2).
22. Subs. by s. 5, *ibid.*, for certain words.
23. Subs. by Act 53 of 1988, s. 5, for "shall not be eligible for renomination for more than two terms"
24. Ins. by Act 44 of 1978, s. 6.
25. Ins. by Act 44 of 1978, s. 7.
26. Certain words omitted by s. 8, *ibid.*
27. Ins. by s. 8, *ibid.*
28. Ins. by Act 53 of 1988, s. 6.
29. Subs. by Act 44 of 1978, s. 9, for certain words.
30. Subs. by Act 53 of 1988, s. 7 for cl. (f).
31. Subs. by Act 44 of 1978, s. 9, for certain words.
32. Ins. by Act 53 of 1988, s. 7, for cl. (f).
33. Ins. by Act 53 of 1988, s. 8.
34. S. 18 renumbered as sub-section (1) thereof by Act 53 of 1988 s. 9.
35. Ins. by s. 9, *ibid.*
36. Subs. by Act 53 of 1988, s. 10 for "industry of trade".
37. Subs. by Act 44 of 1978, s. 10, for sub-section (4).
38. Subs. by Act 44 of 1978, s. 11, for "Code of Criminal Procedure, 1898 (5 of 1898)".
39. Subs. by s. 11, *ibid.*, for "section 98".

40. Subs. by Act 53 of 1988, s. 11, for "stream or well".
41. Subs. by s. 12, Act 53 of 1988, for sub-sections (1) and (2).
42. Subs. by s. 12, Act 53 of 1988, for sub-sections (4), (5) and (6).
43. Subs. by Act 44 of 1978, s. 13, for "stream or well".
44. Subs. by s. 13, *ibid*, for certain words.
45. Subs. by Act 53 of 1988, s. 13, for sub-section (1).
46. Subs. by Act 44 of 1978, s. 14 for sub-section (2).
47. Subs. by Act 53 of 1988, s. 13, for cl. (a).
48. Subs. by Act 44 of 1978, s. 15, for sub-section (2).
49. Subs. by Act 53 of 1988, s. 14, for sub-section (1).
50. Subs. by s. 15, *ibid*., for sub-section (1).
51. Subs. by Act 53 of 1988, s. 16, for "any stream or well".
52. Subs. by s. 16, *Ibid*., for "stream or well".
53. Subs. by s. 16, *ibid*., for "into the stream of well".
54. Subs. by s. 17, *ibid*., for sub-section (1).
55. Subs. by Act 53 of 1988, s. 18.
56. Ins. by Act 44 of 1978, s. 16.
57. Ins. by s. 17, *ibid*.
58. Ins. by Act 53 of 1988, s. 19.
59. Subs. by Act 53 of 1988, s. 20 for s. 39.
60. Subs. by Act 53 of 1988, s. 21 for s. 11.
61. Subs. by Act 53 of 1988, s. 22, for "one thousand rupees".
62. Subs. by s. 24, *ibid*., for "one year".
63. Subs. by *ibid*., s. 23, for "six months".
64. Ins. by s. 25, *ibid*.
65. Subs. by Act 53 of 1988, s. 26, for sub-section (1).
66. Ins. by s. 26, *ibid*.
67. Sub-section (2) renumbered as sub-section (3) by s. 26, *ibid*.
68. Subs. by Act 44 of 1978, s. 19, for certain words.
69. Subs. by Act 44 of 1978, s. 20, for cl. (d).
70. Cls. (h) and (i) omitted by s. 20, *ibid*.
71. Subs. by Act 53 of 1988, s. 27.
72. Ins. by Act, *ibid*., s. 27.
73. Subs. by Act 44 of 1978, s. 20, for certain words.
74. Ins. by Act 44 of 1978, s. 21.
75. Subs. by Act 53 of 1988, s. 28 for cl. (n).
76. Ins. by s. 28, *ibid*.

DOCUMENT-I(B)

The Forest (Conservation) Act, 1980

(Act No. 69 of 1980)[1]

(*27th December, 1980*)

An Act to provide for the conservation of forests and for matters connected therewith or ancillary or incidental thereto.

Be it enacted by Parliament in the Thirty-first year of the Republic of India as follows:—

1. Short title, extent and commencement.—(1) This Act may be called the Forest (Conservation) Act, 1980.

(2) It extends to the whole of India except the State of Jammu and Kashmir.

(3) It shall be deemed to have come into force on the 25th day of October, 1980.

2. Restriction on the dereservation of forests or use of forest land for non-forest purpose.—Notwithstanding anything contained in any other law for the time being in force in a State, no State Government or other authority shall make, except with the prior approval of the Central Government, any order directing—

(i) that any reserved forest (within the meaning of the expression "reserved forest" in any law for the time being in force in that State) or any portion thereof, shall cease to be reserved;

(ii) that any forest land or any portion thereof may be used for any non-forest purpose;

[2][(iii) that any forest land or any portion thereof may be assigned by way of lease or otherwise to any private person or to any authority, corporation, agency or any other organisation not owned, managed or controlled by Government;

(iv) that any forest land or any portion thereof may be cleared of trees which have grown naturally in that land or portion, for the purpose of using it for reforestation].

[3][*Explanation.*—For the purpose of this section "non-forest purpose" means the breaking up or clearing of any forest land or portion thereof for—

(a) the cultivation of tea, coffee, spices, rubber, palms, oil-bearing plants, horticultural crops or medicinal plants;

(b) any purpose other than re-afforestation, but does not include any work relating or ancillary to conservation, development and management of forests and wild life, namely, the establishment of check-posts, fire lines, wireless communications and construction of fencing, bridges and culverts, dams, waterholes, trench marks, boundary marks, pipelines or other like purpose.]

3. Constitution of Advisory Committee.—The Central Government may constitute a Committee consisting of such number of persons as it may deem fit to advise that Government with regard to—

(i) the grant of approval under section 2; and

(ii) any other matter connected with the conservation of forests which may be referred to it by the Central Government.

[4][**3-A. Penalty for contravention of the provisions of the Act.**—Whoever contravenes or abets the contravention of any of the provisions of Section 2, shall be punishable with simple imprisonment for a period which may extend to fifteen days.]

[5][**3-B. Offences by authorities and Government Departments.**—(1) Where any offence under this act has been committed—

(a) by any department of Government, the Head of the Department; or

(b) by any authority, every person, who, at the time the offence was committed, was directly in charge of, and was responsible to, the authority for the conduct of the business of the authority as well as the authority;

shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly;

Provided that nothing contained in this sub-section shall render the head of the department or any person referred to in Clause (b), liable to any punishment if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence punishable under the Act had been committed by a department or any authority referred to in clause (b) of sub-section (1) and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any officer, other than the Head of the Department, or in the case of an authority, any person other than the persons referred to in clause (b) of Sub-section (1), such officer or persons shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.]

4. Power to make rules.—(1) The Central Government may, by notification in the Official Gazette, make rules for carrying out the provisions of this Act.

(2) Every rule made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

FOOTNOTES

1. Received the assent of the President on the 27th December, 1980, and the Act published in Gazette of India (Extraordinary), Part II, Section I, dated 27-12-80, pages 737-38.
2. Ins. by Act 69 of 1988, vide Section 2 thereof (w.e.f. 15-3-1989).
3. Subs. by Act 69 of 1988, vide Section 2 thereof (w.e.f. 15-3-1989).
4. Inserted by Act 69 of 1988, vide Section 3 thereof (w.e.f., 15-3-1989).
5. Inserted by Act 69 of 1988, vide Section 3 thereof (w.e.f., 15-3-1989).

DOCUMENT - I (C)

The Air (Prevention and Control of Pollution) Act, 1981

(No. 14 of 1981)

An Act to provide for the prevention, control and abatement of air pollution, for the establishment, with a view to carrying out the aforesaid purposes, of Boards, for conferring on and assigning to such Board's powers and functions relating thereto and for matters connected therewith.

Whereas decisions were taken at the United Nations Conference on the Human Environment held in Stockholm in June, 1972, in which India participated, to take appropriate steps for the preservation of the natural resources of the earth which, among other things, include the preservation of the quality of air and control of air pollution;

And whereas it is considered necessary to implement the decisions aforesaid insofar as they relate to the preservation of the quality of air and control of air pollution;

Be it enacted by Parliament in the Thirty-second Year of the Republic of India as follows:—

CHAPTER I

PRELIMINARY

1. Short title, extent and commencement.—(1) This Act may be called the Air (Prevention and Control of Pollution) Act, 1981.

(2) It extends to the whole of India.

(3) It shall come into force on such date[1] as the Central Government may, by notification in the Official Gazette, appoint.

2. Definitions.—In this Act, unless the context otherwise requires,—

(a) "air pollutant" means any solid, or gaseous substance [2][(including noise)] present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment;

(b) "air pollution" means the presence in the atmosphere of any air pollutant;

(c) "approved appliances" means any equipment or gadget used for the bringing of any combustible material or for generating or consuming any fume, gas of particulate matter and approved by the State Board for the purpose of this Act;

(d) "approved fuel" means any fuel approved by the State Board for the purposes of this Act;

(e) "automobile" means any vehicle powered either by internal combustion engine or by any method of generating power to drive such vehicle by burning fuel;

(f) "Board" means the Central Board or State Board;

(g) "Central Board" means the [3][Central Board for the Prevention and Control of Water Pollution] constituted under section 3 of the Water (Prevention and Control of Pollution) Act, 1974;

(h). "chimney" includes any structure with an opening or outlet from or through which any air pollutant may be emitted;

(i) "control equipment" means any apparatus, device, equipment or system of control of quality and manner of emission of any air pollutant and includes any device used for securing the efficient operation of any industrial plant;

(j) "emission" means any solid or liquid or gaseous substance coming out of any chimney, duct or flue or any other outlet;

(k) "industrial plant" means any plant used for any industrial or trade purposes and emitting any air pollutant into the atmosphere:

(l) "member" means a member of the Central Board or a State Board, as the case may be, and includes the Chairman thereof;

[4][(m) "occupier", in relation to any factory or premises, means the person who has control over the affairs of the factory or the premises, and includes, in relation to any substance, the person in possession of the substance;]

(n) "prescribed" means prescribed by rules made under this Act by the Central Government or as the case may be, the State Government;

(o) "State Board" means,—

(i) in relation to a State in which the Water (Prevention and Control of Pollution) Act, 1974, is in force and the State Government has constituted for that State a [5][State Board for the Prevention and Control of Water Pollution] under section 4 of that Act, the said State Board; and

(ii) in relation to any other State, the State Board for the Prevention and Control of Air Pollution constituted by the State Government under section 5 of this Act.

CHAPTER II

CENTRAL AND STATE BOARDS FOR THE PREVENTION AND CONTROL OF AIR POLLUTION

[6][**3. Central Board for the Prevention and Control of Air Pollution.**—The Central Board for the Prevention and Control of Water Pollution constituted under section 3 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974), shall, without prejudice to the exercise and performance of its powers and functions under this Act, exercise the powers and perform the functions of the Central Board for the Prevention and Control of Air Pollution under this Act.

[7][**4. State Boards for the Prevention and Control of Water Pollution to be State Boards for the Prevention and Control of Air Pollution.**—In any State in which the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974), is in force and the State Government has constituted for that State a State Board for the Prevention and Control of Water Pollution under section 4 of that Act, such State Board shall be deemed to be the State Board for the Prevention and Control of Air Pollution constituted under section 5 of this Act and accordingly that State Board for the Prevention and Control of Water Pollution shall, without prejudice to the exercise and performance of its powers and functions under that Act, exercise the powers and perform the functions of the State Board for the Prevention and Control of Air Pollution under this Act.]

5. Constitution of State Boards.—(1) In any State in which the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974), is not in force, or that Act is in force but the State Government has not constituted a [7][State Board for the Prevention and Control of Water Pollution] under that Act, the State Government shall, with effect from such date as it may, by notification in the Official Gazette, appoint, constitute a State Board for the Prevention and Control of Air Pollution under such name as may be specified in the notification, to exercise the powers conferred on, and perform the functions assigned to, that Board under this Act.

(2) A State Board constituted under this Act shall consist of the following members, namely:—

(a) a Chairman, being a person, having a person having special knowledge or practical experience in respect of matters relating to environmental protection, to be nominated by the State Government: Provided that the Chairman may be either whole-time or part-time as the State Government may think fit;

(b) such number of officials, not exceeding five, as the State Government may think fit, to be nominated by the State Government to represent that government;

(c) such number of persons, not exceeding five, as the State Government may think fit, to be nominated by the State Government from amongst the members of the local authorities functioning within the State;

(d) such number of non-officials, not exceeding three, as the State Government may think fit, to be nominated by the State Government to represent the interest of agriculture, fishery or industry or trade or labour or any other interest, which in the opinion of that government, ought to be represented;

(e) two persons to represent the companies or corporations owned, controlled or managed by the State Government, to be nominated by that Government;

[9][(f) a full-time member-secretary having such qualifications knowledge and experience of scientific, engineering or management aspects of pollution control as may be prescribed, to be appointed by the State Government:]

Provided that the State Government shall ensure that not less than two of the members are persons having special knowledge or practical experience in respect of matters relating to the improvement of the quality or air or the prevention, control or abatement of air pollution.

(3) Every State Board constituted under this Act shall be a body corporate with the name specified by the State Government in the notification issued under sub-section (1), having perpetual succession and a common seal with power, subject to the provisions of this Act, to acquire and dispose of property and to contract, and may by the said name sue or be sued.

6. Central Board to exercise the powers and perform the functions of a State Board in the Union territories.—No State Board shall be constituted for a Union territory and in relation to Union territory, the Central Board shall exercise the powers and perform the functions of a State Board under this Act for that Union territory:

Provided that in relation to any Union territory the Central Board may delegate all or any of its powers and functions under this section to such person or body or persons as the Central Government may specify.

7. Terms and conditions of service of members.—(1) Save as otherwise provided by or under this Act, a member of a State Board constituted under this Act, other than the member-secretary, shall hold office for a term of three years from the date on which his nomination is notified in the Official Gazette:

Provided that a member shall, notwithstanding the expiration of his term, continue to hold office until his successor enters upon his office.

(2) The terms of office of a member of a State Board constituted under this Act and nominated under clause (b) or clause (e) of sub-section (2) of section 5 shall come to an end as soon as he ceases to hold the office under the State Government as the case may be, the company or corporation owned, controlled or managed by the State Government, by virtue of which he was nominated.

(3) A member of a State Board constituted under this Act, other than the member-secretary, may at any time resign his office by writing under his hand addressed,—

(a) in the case of the Chairman, to the State Government; and

(b) in any other case, to the Chairman of the State Board, and the seat of the Chairman or such other member shall thereupon become vacant.

(4) A member of a State Board constituted under this Act, other than the member-secretary, shall be deemed to have vacated his seat, if he is absent without reason, sufficient in the opinion of the State Board, from three consecutive meetings of the State Board or where he is nominated under clause (c) of sub-section (2) of section 5, he ceases to be a member of the local authority and such vacation of seat shall, in either case, take effect from such as the State Government may, by notification in the Official Gazette, specify.

(5) A casual vacancy in a State Board constituted under this Act shall be filled by a fresh nomination and the person nominated to fill the vacancy shall hold office only for the remainder of the term for which the member whose place he takes was nominated.

(6) A member of a State Board constituted under this Act shall be eligible for re-nomination,[10]*****

(7) The other terms and conditions of service of the Chairman and other members (except the member-secretary) of a State Board constituted under this Act shall be such as may be prescribed.

8. Disqualifications.—(1) No person shall be a member of a State Board constituted under this Act, who—

(a) is, or at any time has been, adjudged insolvent, or

(b) is of unsound mind and has been so declared by a competent court, or

(c) is, or has been, convicted of an offence which, in the opinion of the State Government, involves moral turpitude, or

(d) is, or at any time has been, convicted of an offence under this Act, or

(e) has directly or indirectly by himself or by any partner, any share or interest in any firm or company carrying on the business of manufacture, sale, or hire of machinery, industrial plant, control equipment or any other apparatus for the improvement of the quality of air or for the prevention, control or abatement of air pollution, or

(f) is a director or a secretary, manager or other salaried officer or employee of any company or firm having any contract with the Board, or with the Government constituting the Board or with a local authority in the State, or with a company or corporation owned, controlled or managed by the Government, for the carrying out of programmes for the improvement of the quality of air or for the prevention, control or abatement of air pollution, or

(g) has so abused, in the opinion of the State Government, his position as a member, as to render his continuance on the State Board detrimental or the interest of the general public.

(2) The State Government shall, by order in writing, remove any member who is, or has become, subject to any disqualification mentioned in sub-section (1).

Provided that no order of removal shall be made by the State Government under this section unless the member concerned has been given a reasonable opportunity of showing cause against the same.

(3) Notwithstanding anything contained in sub-section (1) or subsection (6) of section 7, a member who has been removed under this section shall not be eligible to continue to hold office until his successor enters upon his office, or, as the case may be, for re-nomination as a member.

9. Vacation of seats by members.—If a member of a State Board constituted under this Act becomes subject to any of the disqualifications specified in section 8, his seat shall become vacant.

10. Meeting of Board.—(1) For the purposes of this Act, a Board shall meet at least once in every three months and shall observe such rules of procedure in regard to the transaction of business at its meetings as may be prescribed:

Provided that it, in the opinion of the Chairman, any business of an urgent nature is to be transacted, he may convene a meeting of the Board at such time as he thinks fit for the aforesaid purpose.

(2) Copies of minutes of the meetings under sub-section (1) shall be forwarded to the Central Board and to the State Government concerned.

11. Constitution of committees.—(1) A Board may constitute as many committees consisting wholly of members or partly of members and partly of other persons and for such purpose or purposes as it may think fit.

(2) A committee constituted under this section shall meet at such time and at such place, and shall observe such rules of procedure in regard to the transaction of business at its meetings, as may be prescribed.

(3) The members of a committee other than the members of the Board shall be paid such fees and allowances, for attending its meetings and for attending to any other work of the Board as may be prescribed.

12. Temporary association of persons with Board for particular purposes.—(1) A Board may associate with itself in such manner, and for such purposes, as may be prescribed, any person whose assistance or advice it may desire to obtain in performing any of its functions under this Act.

(2) A person associated with the Board under sub-section (1) for any purpose shall have a right to take part in the discussions of the Board relevant to that purpose, but shall not have a right to vote at the meetings of the Board and shall not be a member of the Board for any other purpose.

(3) A person associated with a Board under sub-section (1) shall be entitled to receive such fees and allowances as may be prescribed.

13. Vacancy in Board not to invalidate acts or proceedings.—No act or proceeding of a Board or any committee thereof shall be called in question on the ground merely of the existence of any vacancy in or any defect in the constitution of, the Board or such committee, as the case may be.

14. Member-secretary and officers and other employees of State Boards.—(1) The terms and conditions of service of the member-secretary of a State Board constituted under this Act shall be such as may be prescribed.

[11][(2) The member-secretary of a State Board, whether constituted

under this Act or not, shall exercise such powers and perform such duties as may be prescribed or as may, from time to time, be delegated to him by the State Board or its Chairman.]

(3) Subject to such rules as may be made by the State Government in this behalf, a State Board, whether constituted under this Act or not, may appoint such officers and other employees as it considers necessary of the efficient performance of its functions under this Act.

(4) The method of appointment, the conditions of service and the scale of pay of the officers (other than the member-secretary) and other employees of a State Board appointed under sub-section (3) shall be such as may be determined by regulations made by the State Board under this Act.

(5) Subject to such conditions as may be prescribed, a State Board constituted under this Act may from time to time appoint any qualified person to be a consultant to the Board and pay him such salary and allowances or fees, as it thinks fit.

15. Delegation of powers.—A State Board may, by general or special order, delegate to the Chairman or the member-secretary or any other officer of the Board subject to such conditions and limitations, if any, as may be specified in the order, such of its powers and functions under this Act as it may deem necessary.

CHAPTER III

POWERS AND FUNCTIONS OF BOARDS

16. Functions of Central Board.—(1) Subject to the provisions of this Act, and without prejudice to the performance, of its functions under the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974), the main functions of the Central Board shall be to improve the quality or air and to prevent, control or abate air pollution in the country.

(2) In particular and without prejudice to the generality of the foregoing functions, the Central Board may—

(a) advise the Central Government on any matter concerning the improvement of the quality of air and the prevention, control or abatement of air pollution;

(b) plan and cause to be executed a nation-wide programme for the prevention, control or abatement of air pollution;

(c) co-ordinate the activities of the State and resolve disputes among them;

(d) provide technical assistance and guidance to the State Boards, carry out and sponsor investigations and research relating to problems of air pollution and prevention, control or abatement of air pollution;

[12][(dd) perform such of the function of any State Board as may be specified in and order made under sub-section (2) of section 18;]

(e) plan and organise the training of persons engaged or to be engaged in programmes for the prevention, control or abatement of air pollution on such terms and conditions as the Central Board may specify;

(f) organise through mass media a comprehensive programme regarding the prevention, control or abatement of air pollution;

(g) collect, compile and publish technical and statistical data relating to air pollution and the measures devised for its effective prevention, control or abatement and prepare manuals, codes or guides relating to prevention, control or abatement or air pollution;

(h) lay down standards for the quality of air;

(i) collect and disseminate information in respect of matters relating to air pollution;

(j) perform such other functions as may be prescribed.

(3) The Central Board may establish or recognise a laboratory or laboratories to enable the Central Board to perform its functions under this section efficiently.

(4) The Central Board may—

(a) delegate any of its functions under this Act generally or specially to any of the committees appointed by it;

(b) do such other things and perform such other acts as it may think necessary for the proper discharge of its functions and generally for the purpose of carrying into effect the purposes of this Act.

17. Functions of State Board.—(1) Subject to the provisions of this Act, and without prejudice to the performance of its functions, if any, under the Water (Prevention and Control of Pollution) Act, 1974 (Act 6 of 1974), the functions of a State Board shall be—

(a) to plan a comprehensive programme for the prevention, control or abatement of air pollution and to secure the execution thereof;

(b) to advise the State Government on any matter concerning the prevention, control or abatement of air pollution;

(c) to collect and disseminate information relating to air pollution;

(d) to collaborate with the Central Board in organising the training of persons engaged or to be engaged in programmes relating to prevention, control or abatement of air pollution and to organise mass-education programme relating thereto;

(e) to inspect, at all reasonable times, any control equipment, industrial plant or manufacturing process and to give, by order, such directions to such persons as it may consider necessary to take steps for the prevention, control or abatement of air pollution;

(f) to inspect air pollution control areas at such intervals as it may think necessary, assess the quality of air therein and take steps for the prevention, control or abatement of air pollution in such areas;

(g) to lay down, in consultation with the Central Board and having regard to the standards for the quality of air laid down by the Central Board, standards for emission of air pollutants into the atmosphere from industrial plants and automobiles or for the discharge of any air pollutant into the atmosphere from any other source whatsoever not being a ship or an aircraft:

Provided that different standards for emission may be laid down under this clause for different industrial plants having regard to the quantity and composition of emission of air pollutants into the atmosphere from such industrial plants:

(h) to advise the State Government with respect to the suitability of any premises or location for carrying on any industry which is likely to cause air pollution;

(i) to perform such other functions as may be prescribed or as may, from time to time, be entrusted to it by the Central Board or the State Government;

(j) to do such other things and to perform such other acts as it may think necessary for the proper discharge of its functions and generally for the purpose of carrying into effect the purposes of this Act.

(2) A State Board may establish or recognise a laboratory or laboratories to enable the State Board to perform its functions under this section efficiently.

[13][**18. Power to give directions.**—(1) In the performance of its functions under this Act—

(a) the Central Board shall be bound by such directions in writing as the Central Government may give to it; and

(b) every State Board shall be bound by such directions in writing as the Central Board or the State Government may give to it:

Provided that where a direction given by the State Government is inconsistent with the directions given by the Central Board, the matter shall be referred to the Central Government for its decision.

[14][(2) Where the Central Government is of the opinion that any State Board has defaulted in complying with any directions given by the Central Board under sub-section (1) and as a result of such default a grave emergency has arisen and it is necessary or expedient so to do in the public interest, it may, by order, direct the Central Board to perform any of the functions of the State Board in relation to such area, for such period and for such purposes, as may be specified in the order.

(3) Where the Central Board performs any of the functions of the State Board in pursuance of a direction under sub-section (2), the expenses, if any, incurred by the Central Board with respect to the performance of such functions may, if the State Board is empowered to recover such expenses, be recovered by the Central Board with interest (at such reasonable rate as the Central Government may, by order, fix) from the date when a demand for such expenses is made until it is paid from the person or persons concerned as arrears of land revenue or of public demand.

(4) For the removal of doubts, it is hereby declared that any directions to perform the functions of any State Board given under sub-section (2) in respect of any area would not preclude the State Board from performing such functions in any other area in the State or any of its other functions in that area.]

CHAPTER IV

PREVENTION AND CONTROL OF AIR POLLUTION

19. Power to declare air pollution control areas.—(1) The State Government may, after consultation with the State Board, by notification in the Official Gazette declare in such manner as may be prescribed, any area of areas within the State as air pollution control area or areas for the purposes of this Act.

(2) The State government may, after consultation with the State Board, by notification in the Official Gazette,—

(a) after any air pollution control area whether by way of extension or reduction;

(b) declare a new air pollution control area in which may be merged one or more existing air pollution control areas or any part or parts thereof.

(3) If the State Government, after consultation with the State Board, is of opinion that the use of any fuel, other than an approved fuel, in any air pollution control area or part thereof, may cause or is likely to cause air pollution, it may, by notification in the Official Gazette, prohibit the use of such fuel in such area or part thereof with effect from such date (being not less than three months from the date of publication of the notification) as may be specified in the notification.

(4) The State Government may, after consultation with the State Board, by notification in the Official Gazette, direct that with effect from such date as may be specified therein, no appliance, other than an approved appliance, shall be used in the premises situated in an air pollution control area:

Provided that different dates may be specified for different parts of an air pollution control area or for the use of different appliances.

(5) If the State Government, after consultation with the State Board, is of opinion that the burning of any material (not being fuel) in any air pollution control area or part thereof may cause or is likely to cause air pollution, it may, by notification in the Official Gazette, prohibit the burning of such material in such area or part thereof.

20. Powers to give instructions for ensuring standards for emission from automobiles.—With a view to ensuring that the standards for emission of air pollutants from automobiles laid down by the State Board under clause (g) of sub-section (1) of section 17 are complied with, the State Government shall, in consultation with the State Board, give such instructions as may be deemed necessary to the concerned authority in charge of registration of motor vehicles under the Motor Vehicles Act, 1939 (Act 4 of 1939), and such authority shall, notwithstanding anything contained in that Act or the rules made thereunder be bound to comply with such instructions.

21. [15][**Restrictions on use of certain industrial plants.**—(1) Subject to the provisions of this section, no person shall, without the previous consent of the State Board, establish or operate any industrial plant in an air pollution control area:

Provided that a person operating any industrial plant in any air pollution control area immediately before the commencement of section 9 of the Air (Prevention and Control of Pollution) Amendment Act, 1987, for which no consent was necessary prior to such commencement, may continue to do so for a period of three months from such commencement or, if he has made an application for such consent within the said period of three months, till the disposal of such application.]

(2) An application for consent of the State Board under sub-section (1) shall be accompanied by such fees as may be prescribed and shall be made in the prescribed form and shall contain the particulars of the industrial plant and such other particulars as may be prescribed:

Provided that where any person, immediately before the declaration of any area as an air pollution control area, operates in such area any industrial plant, [16]*** such person shall make the application under this sub-section within such period (behind not less than three months from the date of such declaration) as may be prescribed and where such person makes such application, he shall be deemed to be operating such industrial plant with the consent of the State Board until the consent applied for has been refused.

(3) The State Board may make such inquiry as it may deem fit in respect of the application for consent referred to in sub-section (1) and in making any such inquiry, shall follow such procedure as may be prescribed.

(4) Within a period of four months after the receipt of the application for consent referred to in sub-section (1), the State Board shall, by order in writing, [17][and for reasons to be recorded in the order, grant the consent applied for subject to such conditions and for such period as may be specified in the order, or refuse consent:]

[18][Provided that it shall be open to the State Board to cancel such consent before the expiry of the period for which it is granted or refuse further consent after such expiry if the conditions subject to which such consent has been granted are not fulfilled:

Provided further that before cancelling a consent or refusing a further consent under the first provisions, a reasonable opportunity of being heard shall be given to the person concerned.]

(5) Every person to whom consent has been granted by the State Board under sub-section (4), shall comply with the following conditions, namely—

(i) the control equipment of such specifications as the State Board may approve in this behalf shall be installed and operated in the premises where the industry is carried on or proposed to be carried on;

(ii) the existing control equipment, if any, shall be altered or replaced in accordance with the directions of the State Board;

(iii) the control equipment referred to in clause (i) or clause (ii) shall be kept at all times in good running condition;

(iv) chimney, wherever necessary, of such specifications as the State Board may approve in this behalf shall be erected or re-erected in such premises;

(v) such other conditions as the State Board, may specify in this behalf; and

(vi) the conditions referred to in clauses (i), (ii) and (iv) shall be complied with within such period as the State Board may specify in this behalf:

Provided that in the case of a person operating any industrial plant 19*** in an air pollution control area immediately before the date of declaration of such area as an air pollution control area, the period so specified shall not be less than six months:

Provided further that—

(a) after the installation of any control equipment in accordance with the specifications under clause (i), or

(b) after the alteration or replacement of any control equipment in accordance with the directions of the State Board under clause (ii), or

(c) after the erection or re-erection of any chimney under clause (iv), no control equipment or chimney shall be altered or replaced or, as the case may be, erected or re-erected except with the previous approval of the State Board.

(6) If due to any technological improvement or otherwise the State Board is of opinion that all or any of the conditions referred to in sub-section (5) require or requires variation (including the change of any control equipment, either in whole or in part), the State Board shall, after giving the person to whom consent has been granted an opportunity of being heard, vary all or any of such conditions and thereupon such person shall be bound to comply with the conditions as so varied.

(7) Where a person to whom consent has been granted by the State Board under sub-section (4) transfers his interest in the industry to any other person, such consent shall be deemed to have been granted to such other person and he shall be bound to comply with all the conditions subject to which it was granted as if the consent was granted to him originally.

22. Persons carrying on industry, etc., not to allow emission of air pollutants in excess of the standards laid down by State Board.—No person[20]**** operating any industrial plant, in any air pollution control area shall discharge or cause or permit to be discharged the emission of any air pollutant in excess of the standards laid down by the State

Board under clause (g) of sub-section (1) of section 17.

[21][**22A. Power of Board to make application to court for restraining persons from causing air pollution.**—(1) Where it is apprehended by a Board that emission of any air pollutant, in excess of the standards laid down by the State Board under clause (g) of sub-section (1) of section 17, is likely to occur by reason of any person operating an industrial plant or otherwise in any air pollution control area, the Board may make an application to a court, not inferior to that of a Metropolitan Magistrate or a Judicial Magistrate of the first class for restraining such person from emitting such air pollutant.

(2) On receipt of the application under sub-section (1), the court may make such order as it deems fit.

(3) Where under sub-section (2), the court makes an order restraining any person from discharging or causing or permitting to be discharged the emission of any air pollutant, it may, in that order,—

(a) direct such person to desist from taking such action as is likely to cause emission;

(b) authorise the Board, if the direction under clause (a) is not complied with by the person to whom such direction is issued, to implement the direction in such manner as may be specified by the court.

(4) All expenses incurred by the Board in implementing the directions of the court under clause (b) of sub-section (3) shall be recoverable from the person concerned as arrears of land revenue or of public demand.

23. Furnishing of information to State Board and other agencies in certain cases.—(1) Where in any[22]*** area the emission of any air pollutant into the atmosphere in excess of the standards laid down by the State Board occurs or is apprehended to occur due to accident or other unforeseen act or event, the person in charge of the premises from where which emission occurs or is apprehended to occur shall forthwith intimate the fact of such occurrence or the apprehension of such occurrence to the State Board and to such authorities or agencies as may be prescribed.

(2) On receipt of information with respect to the fact or the apprehension of any occurrence of the nature referred to in sub-section (1), whether through intimation under that sub-section or otherwise, the State Board and the authorities or agencies shall, as early as practicable, cause such remedial measure to be taken as are necessary to mitigate the emission of such air pollutants.

(3) Expenses, if any, incurred by the State Board, authority or agency with respect to the remedial measures referred to in sub-section (2) together with interest (at such reasonable rate, as the State Government may, by order, fix) from the date when a demand for the expenses is made until it is paid, may be recovered by that Board, authority or agency from the person concerned, as arrears of land revenue, or of public demand.

24. Power of entry and inspection.—(1) Subject to the provisions of this section, any person empowered by a State Board in this behalf shall have a right to enter, at all reasonable times with such assistance as he considers necessary, any place—

(a) for the purpose of performing any of the functions of the State Board entrusted to him;

(b) for the purpose of determining whether and if so in what manner, any such functions are to be performed or whether any provisions of this Act or the rules made thereunder or any notice, order, direction or authorisation served, made, given or granted under this Act is being or has been complied with;

(c) for the purpose of examining and testing any control equipment, industrial plant, record, register, document or any other material object or for conducting a search of any place in which he has reason to believe that an offence under this Act or the rules made thereunder has been or is being or is about to be committed and for seizing any such control equipment, industrial plant, record, register, document or other material object if he has reasons to believe that it may furnish evidence of the commission of an offence punishable under this Act or the rules made thereunder.

(2) Every person[23]*** operating any control equipment or any industrial plant, in an air pollution control area shall be bound to render all assistance to the person empowered by the State Board under sub-section (1) for carrying out the functions under that sub-section and if he fails to do so without any reasonable cause or excuse, he shall be guilty of an offence under this Act.

(3) If any person wilfully delays or obstructs any person empowered by the State Board under sub-section (1) in the discharge of his duties, he shall be guilty on an offence under this Act.

(4) The provisions of the Code of Criminal Procedure, 1973, or, in relation to the State of Jammu and Kashmir, or any area in which that Code is not in force, the provisions of any corresponding law in force in that State or area, shall, so far as may be, apply to any search or seizure under this section as they apply to any search or seizure made under the

authority of a warrant issued under section 94 of the said code or, as the case may be, under the corresponding provisions of the said law.

25. Power to obtain formation.—For the purposes of carrying out the functions entrusted to it, the State Board or any officer empowered by it in this behalf may call for any information (including information regarding the types of air pollutants emitted into the atmosphere and the level of the emission of such air pollutants) from the occupier or any other person carrying on any industry or operating any control equipment or industrial plant and for the purpose of verifying the correctness of such information, the State Board or such officer shall have the right to inspect the premises where such industry, control equipment or industrial plant is being carried on or operated.

26. Power to take samples of air or emission and procedure to be followed in connection therewith.—(1) A State Board or any officer empowered by it in this behalf shall have power to take, for the purpose of analysis, samples of air or emission from any chimney, flue or duct or any other outlet in such manner as may be prescribed.

(2) The result of any analysis of a sample of emission taken under sub-section (1) shall not be admissible in evidence in any legal proceeding unless the provisions of sub-section (3) and (4) are complied with.

(3) Subject to the provisions of sub-section (4), when a sample of emission is taken for analysis under sub-section (1), the person taking the sample shall—

(a) serve on the occupier or his agent, a notice, then and there, in such form as may be prescribed, of his intention to have it so analysed;

(b) in the presence of the occupier or his agent, collect a sample of emission for analysis;

(c) cause the sample to be placed in a container or containers which shall be marked and sealed and shall also be signed both by the person taking the sample and the occupier or his agent;

(d) send, without delay, the container to the laboratory established or recognised by the State Board under section 17 or, if a request in that behalf is made by the occupier or his agent when the notice is served on him under clause (a), to the laboratory established or specified under sub-section (1) of section 28.

(4) When a sample of emission is taken for analysis under sub-section (1) and the person taking the sample serves on the occupier or his agent, a notice clause (a) sub-section (3), then, —

(a) in a case where the occupier or his agent wilfully absents himself, the person taking the sample shall collect the sample of emission for analysis to be placed in a container or containers which shall be marked and sealed and shall also be signed by the person taking the sample, and

(b) in a case where the occupier or his agent is present at the time of taking the sample but refuses to sign the marked and sealed container or containers of the sample of emission as required under clause (c) of sub-section (3), the marked and sealed container or containers shall be signed by the person taking the sample.

and the container or containers shall be sent without delay by the person taking the sample for analysis to the laboratory established or specified under sub-section (1) of section 28 and such person shall inform the Government analyst appointed under sub-section (1) of section 29, in writing, about the wilful absence of the occupier or his agent, or, as the case may be, his refusal to sign the container or containers.

27. Reports of the results of analysis on samples taken under section 26.—Where a sample of emission has been sent for analysis to the laboratory established or recognised by the State Board, the Board analyst appointed under sub-section (2) of section 29 shall analyse the sample and submit a report in the prescribed form of such analysis in triplicate to the State Board.

(2) On receipt of the report under sub-section (1), one copy of the report shall be sent by the State Board to the occupier or his agent referred to in section 26, another copy shall be preserved for production before the court in case any legal proceedings are taken against him and the other copy shall be kept by the State Board.

(3) Where a sample has been sent for analysis under clause (d) of sub-section (3) or sub-section (4) of section 26 to any laboratory mentioned therein, the Government analyst referred to in the said sub-section (4) shall analyse the sample and submit a report in the prescribed form of the result of the analysis in triplicate to the State Board which shall comply with the provisions of sub-section (2).

(4) Any cost incurred in getting any sample analysed at the request of the occupier or his agent as provided in clause (d) of sub-section (3) of section 26 or when he wilfully absents himself or refuses to sign the marked and sealed container or containers of sample of emission under sub-section (4) of that section, shall be payable by such occupier or his agent and in case of default the same shall be recoverable from him as arrears of land revenue or of public demand.

28. State Air Laboratory.—(1) The State Government may, by notification in the Official Gazette,—

(a) establish one or more State Air Laboratories; or

(b) specify one or more laboratories or institutes as State Air Laboratories to carry out the functions entrusted to the State Air Laboratory under this Act.

(2) The State Government may, after consultation with the State Board, make rules prescribing—

(a) the functions of the State Air Laboratory;

(b) the procedure for the submission to the said Laboratory of samples of air or emission for analysis or tests, the form of the Laboratory's report thereon and the fees payable in respect of such report;

(c) such other matters as may be necessary or expedient to enable that Laboratory to carry out its functions.

29. Analysts.—(1) The State Government may, by notification in the Official Gazette, appoint such persons as it thinks fit and having the prescribed qualifications to be government analysts for the purpose of analysis of samples of air or emission sent for analysis to any laboratory established or specified under sub-section (1) of section 28.

(2) Without prejudice to the provisions of section 14, the State Board may, by notification in the Official Gazette, and with the approval of the State Government, appoint such persons as it thinks fit and having the prescribed qualifications to be Board analysts for the purpose of analysis of samples of air or emission sent for analysis to any laboratory established or recognised under section 17.

30. Reports of analysis.—Any document purporting to be a report signed by a Government analyst or, as the case may be, a State Board analyst may be used as evidence of the facts stated therein in any proceeding under this Act.

31. Appeals.—(1) Any person aggrieved by an order made by the State Board under this Act may, within thirty day from the date on which the order is communicated to him, prefer an appeal to such authority (hereinafter referred to as the Appellate Authority) as the State government may think fit to constitute:

Provided that the Appellate Authority may entertain the appeal after the expiry of the said period of thirty days if such authority is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.

(2) The Appellate Authority shall consist of a single person or three persons as the State Government may think fit to be appoint by the State Government.

(3) The form and the manner in which an appeal may be preferred

under sub-section (1), the fees payable for such appeal and the procedure to be followed by the Appellate Authority shall be such may be prescribed.

(4) On receipt of an appeal preferred under sub-section (1), the Appellate Authority shall, after giving the appellant and the State Board an opportunity of being heard, dispose of the appeal as expeditiously as possible.

[24][**31A. Power to give directions.**—Notwithstanding anything contained in any other law, but subject to the provisions of this Act, and to any directions that the Central Government may give in this behalf, a Board may, in the exercise of its powers and performance of its functions under this Act, issue any directions in writing to any person, officer or authority, and such person, officer or authority shall be bound to comply with such directions.

Explanation.—For the avoidance of doubts, it is hereby declared that the power to issue directions under this section includes the power to direct—

(a) the closure, prohibition or regulation of any industry, operation or process; or

(b) the stoppage or regulation of supply of electricity, water or any other service.]

CHAPTER V

FUND, ACCOUNTS AND AUDIT

32. Contributions by Central Government.—The Central Government may, after due appropriation made by Parliament by law in this behalf make in each financial year such contributions to the State Boards as it may think necessary to enable the State Board to perform their functions under this Act:

Provided that noting in this section shall apply to any [25][State Board for the Prevention and Control of Water Pollution] constituted under section 4 of the Water (Prevention and Control of Pollution) Act, 1974, which is empowered by that Act to expend money from its fund thereunder also for performing its functions, under any law for the time being in force relating to the prevention, control or abatement of air pollution.

33. Fund of Board.—(1) Every State Board shall have its own fund for the purposes of this Act and all sums which may, from time to time, be paid to it by the Central Government and all other receipts (by way of contributions, if any, from the State Government, fees, gifts, grants, donations benefactions or otherwise) of that Board shall be carried to the fund of the Board and all payments by the Board shall be made therefrom,

(2) Every State Board may expend such sums as it thinks fir for performing its functions under this Act and such sums shall be treated as expenditure payable out of the fund of that Board.

(3) Nothing in this section shall apply to any [25][State Board for the Prevention and Control of Water Pollution] constituted under section 4 of the Water (Prevention and Control of Pollution) Act, 1974, which is empowered by that Act to expend money from its fund thereunder also for performing its functions under any law for the time being in force relating to the prevention, control or abatement of air pollution.

[26][**33A. Borrowing powers of Board.**—A Board may, with the consent of, or in accordance with the terms of any general or special authority given to it by the Central Government or, as the case may be, the State Government, borrow money from any source by way of loans or issue of bonds, debentures or such other instruments, as it may deem fit, for discharging all or any of its functions under this Act.]

34. Budget.—The Central Board or as the case may be, the State Board shall, during each financial year, prepare, in such form and at such time as may be prescribed, a budget in respect of the financial year next ensuing showing the estimated receipt and expenditure under this Act, and copies thereof shall be forwarded to the Central Government or, as the case may be, the State Government.

[27][**35. Annual report.**—(1) The Central Board shall, during each financial year, prepare, in such form as may be prescribed, an annual report giving full account of its activities under this Act during the previous financial year and copies thereof shall be forwarded to the Central Government within four months from the last date of the previous financial year and that Government shall cause every such report to be laid before both Houses of Parliament within nine months of the last date of the previous financial year.

(2) Every State Board shall, during each financial year, prepare, in such form as may be prescribed, an annual report giving full account of its activities under this Act during the previous financial year and copies thereof shall be forwarded to the State Government within four months from the last date of the previous financial year and that Government shall cause every such report to be laid before the State Legislature within

a period of nine months from the date of the previous financial year.]

36. Accounts and audit.—(1) Every Board shall, in relation to its functions under this Act, maintain proper accounts and other relevant records and prepare an annual statement of accounts in such form as may be prescribed by the Central Government or, as the case may be, the State Government.

(2) The accounts of the Board shall be audited by an auditor duly qualified to act as an auditor of companies under section 226 of the Companies Act, 1956.

(3) The said auditor shall be appointed by the Central Government or, as the case may be, the State Government on the advice of the Comptroller and Auditor-General of India.

(4) Every auditor appointed to audit the accounts of the Board under this Act shall have the right to demand the production of books, accounts, connected vouchers and other documents and papers and to inspect any of the offices of the Board.

(5) Every such auditor shall send a copy of his report together with an audited copy of the accounts to the Central Government or, as the case may be, the State Government.

(6) The Central Government shall, as soon as may be after the receipt of the audit report under sub-section (5), cause the same to be laid before both Houses of Parliament.

(7) The State Government shall, as soon as may be after the receipt of the audit report under sub-section (5), cause the same to be laid before the State Legislature.

CHAPTER VI

PENALTIES AND PROCEDURE

[28][**37. Failure to comply with the provisions of section 21 or section 22 or with the directions issued under section 33A.**—(1) Whoever fails to comply with the provisions of section 21 or section 22 or directions issued under section 31A, shall, in respect of each such failure, be punishable with imprisonment for a term which shall not be less than one year and six months but which may extend to six years and with fine, and in case the failure continues, with an additional fine which may extend to five thousand rupees for every day during which such failure continues after the conviction for the first such failure.

(2) If the failue referred to in sub-section (1) continues beyond a

period of one year after the date of conviction, the offender shall be punishable with imprisonment for a term which shall not be less than two years but which may extend to seven years and with fine.]

38. Penalties for certain acts.—Whoever—

(a) destroys, pulls down, removes, injures or defaces any pillar, post or stake fixed in the ground or any notice or other matter put up, inscribed or placed, by or under the authority of the Board, or

(b) obstructs any person acting under the orders or directions of the Board from exercising his powers and performing his functions under this Act, or

(c) damages any works or property belonging to the Board, or

(d) fails to furnish to the Board or any officer or other employee of the Board any information required by the Board or such officer or other employees for the purpose of this Act, or

(e) fails to intimate the occurrence of the emission of air pollutants into the atmosphere in excess of the standards laid down by the State Board or the apprehension of such occurrence, to the State Board and other prescribed authorities or agencies as required under sub-section (1) of section 23, or

(f) in giving any information which he is required to give under this Act, makes a statement which is false in any material particular, or

(g) for the purpose of obtaining any consent under section 21, makes a statement which is false in any material particular.

shall be punishable with imprisonment for a term which may extend to three months or with fine which may extend to [29][ten thousand rupees] or with both.

[30][**39. Penalty contravention of certain provisions of the Act.**—Whoever contravenes any of the provisions of this Act or any order or direction issued thereunder, for which no penalty has been elsewhere provided in this Act, shall be punishable with imprisonment for a term which may extend to three months or with fine which may extend to ten thousand rupees or with both, and in the case of continuing contravention, with an additional fine which may extend to five thousand rupees for every day during which such contravention continues after conviction for the first such contravention.]

40. Offence by company.—(1) Where an offence under this Act has been committed by a company, every person who, at the time the offence was committed, was directly in charge of, and was responsible to, the company for the conduct of the business of the company, as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this sub-section shall render any such person liable to any punishment provided in this Act, if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any director, manager, secretary or other officer of the company, such director, manager, secretary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

Explanation.—For the purpose of this section,—

(a) "company" means any body corporate, and includes a firm or other association of individuals; and

(b) "director", in relation to a firm, means a partner in the firm.

41. Offence by Government Department.—(1) Where an offence under this Act has been committed by any Department of Government, the Head of the Department shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this section shall render such Head of the Department liable to any punishment if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a Department of Government and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any officer, other than the Head of the Department, such officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

42. Protection of action taken in good faith.—No suit, prosecution or other legal proceeding shall lie against the Government or any officer of the Government or any member or any officer or other employee of the Board in respect of anything which is done or intended to be done in good faith in pursuance of this Act or the rules made thereunder.

[31][**43. Cognizance of offences.**—(1) No court shall take cognizance

of any offence under this Act except on a complaint made by—

(a) a Board or any officer authorised in this behalf by it; or

(b) any person who has given notice of not less than sixty days, in the manner prescribed, of the alleged offence and of his intention to make a complaint to the Board or officer authorised as aforesaid.

and no court inferior to that of a Metropolitan Magistrate or a Judicial Magistrate of the first class shall try any offence punishable under this Act.

(2) Where a complaint has been made under clause (b) of sub-section (1), the Board shall, on demand by such person, make available the relevant reports in its possession to that person:

Provided that the Board may refuse to make any such report available to such person if the same is, in its opinion, against the public interest.]

44. Members, officers and employees of Board to be public servants.—All the members and all officers and other employees of a Board when acting or purporting to act in pursuance of any of the provisions of this Act or the rules made thereunder shall be deemed to be public servant within the meaning of section 21 of the Indian Penal Code (45 of 1960).

45. Reports and returns.—The Central Board shall, in relation to its functions under this Act, furnish to the Central Government, and a State Board shall, in relation to its functions under this Act, furnish of the State government and to the Central Board such reports, returns, statistics, accounts and other information as that Government, or, as the case may be, the Central Board may, from time to time, require.

46. Bar of jurisdiction.—No civil court shall have jurisdiction to entertain any suit or proceeding in respect of any matter which an Appellate Authority constituted under this Act is empowered by or under this Act to determine, and no injunction shall be granted by any court or other authority in respect of any action taken or to be taken in pursuance of any power conferred by or under this Act.

CHAPTER VII

MISCELLANEOUS

47. Power of State Government to supersede State Board.—(1) If at any time the State Government is of opinion—

(a) that a State Board constituted under this Act has persistently made default in the performance of the functions imposed on it by or under this Act, or

(b) that circumstances exist which render it necessary in the public interest so to do,

the State Government may, by notification in the Official Gazette, supersede the State Board for such period, not exceeding six months, as may be specified in the notification:

Provided that before issuing a notification under this sub-section for the reasons mentioned in clause (a), the State Government shall give a reasonable opportunity to the State Board to show cause why it should not be superseded and shall consider the explanations and objections, if any, of the State Board.

(2) Upon the publication of a notification under sub-section (1) superseding the State Board,—

(a) all the members shall, as from the date of supersession, vacate their offices as such;

(b) all the powers functions and duties which may, by or under this Act, be exercised, performed or discharged by the State Board shall, until the State Board is reconstituted under sub-section (3), be exercised, performed or discharged by such person or persons as the State Government may direct;

(c) all property owned or controlled by the State Board shall, until the Board is reconstituted under sub-section (3), vest in the State Government.

(3) On the expiration of the period of supersession specified in the notification issued under sub-section (1), the State Government may—

(a) extend the period of supersession for such further term, not exceeding six months, as it may consider necessary; or

(b) reconstitute the State Board by a fresh nomination or appointment as the case may be, and in such case any person who vacated his office under clause (a) of sub-section (2) shall also be eligible for nomination or appointment:

Provided that the State Government may at any time before the expiration of the period of supersession whether originally specified under sub-section (1) or as extended under this sub-section, take action under clause (b) of this sub-section.

48. Special provision in the case of supersession of the Central Board or the State Boards constituted under the Water (Prevention and Control of Pollution) Act, 1974.—Where the Central Board or any State Board constituted under the Water (Prevention and Control of Pollution) Act, 1974 (Act 6 of 1974), is superseded by the Central Government or the State Government, as the case may be, under that Act, all the powers, functions and duties of the Central Board or such State Board under this Act shall be exercised, performed or discharged during the period of such supersession by the person or persons, exercising, performing or discharging the powers, functions and duties of the Central Board or such State Board under the Water (Prevention and Control of Pollution) Act, 1974, during such period.

49. Dissolution of State Boards constituted under the Act.—(1) As and when the Water (Prevention and Control of Pollution) Act, 1974 (Act 6 of 1974), comes into force in any State and the State Government constitutes a [32][State Board for the Prevention and Control of Water Pollution] under that Act, the State Board constituted by the State Government under this Act shall stand dissolved and the Board first-mentioned shall exercise the powers and perform the functions of the Board second-mentioned in that State.

(2) On the dissolution of the State Board constituted under this Act,—

(a) all the members shall vacate their offices as such;

(b) all moneys and other property of whatever kind (including the fund of the State Board) owned by, or vested in, the State Board, immediately before such dissolution, shall stand transferred to and vest in the [32][State Board for the Prevention and Control of Water Pollution];

(c) every officer and other employee serving under the State Board immediately before such dissolution shall be transferred to and become an officer or other employee of the [33][State Board for the Prevention and Control of Water Pollution] and hold office by the same tenure and at the same remuneration and on the same terms and conditions of service as he would have held the same if the State Board constituted under this Act had not been dissolved and shall continue to do so unless and until such tenure, remuneration and conditions of service are duly altered by the [33][State Board for the Prevention and Control of Water Pollution]:

Provided that the tenure, remuneration and terms and conditions of service of any such officer or other employee shall not be altered to his disadvantage without the previous sanction of the State Government;

(d) all liabilities obligations of the State Board of whatever kind, immediately before such dissolution, shall be deemed to be the liabilities or obligations, as the case may be, of the [33][State Board for the Prevention and Control of Water Pollution] and any proceeding or cause of action, pending or existing immediately before such dissolution by or against the State Board constituted under this Act in relation to such liability or obligation may be continued and enforced by or against the [33][State Board for the Prevention and Control of Water Pollution.]

50. [*Power to amend the Schedule.*] *Rep. by the Air (Prevention and Control of Pollution) Amendment Act, 1987 (47 of 1987, s. 22 (w.e.f. 1-4-1988).*

51. Maintenance of register.—(1) Every State Board shall maintain a register containing particulars of the persons to whom consent has been granted under section 21, the standard for emission laid down by it in relation to each such consent and such other particulars as may be prescribed.

(2) The register maintained under sub-section (1) shall be open to inspection at all reasonable hours by any person interested in or affected by such standards for emission or by any other person authorised by such person in this behalf.

52. Effect of other laws.—Save as otherwise provided by or under the Atomic Energy Act, 1962 (33 of 1962), in relation to radioactive air pollution the provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any enactment other than this Act.

53. Power of Central Government to make rules.—(1) The Central Government may, in consultation with the Central Board by notification in the Official Gazette, make rules in respect of the following matters, namely—

(a) the intervals and the time and place at which meetings of the Central Board or any committee thereof shall be held and the procedure to the followed at such meetings, including the quorum necessary for the transaction of business thereat, under sub-section (1) of section 10 and under sub-section (2) of section 11;

(b) the fees and allowances to be paid to the members of a committee of the Central Board, not being members of the Board, under sub-section (3) of section 11;

(c) the manner in which and the purposes for which persons may be associated with the Central Board under sub-section (1) of section 12;

(d) the fees and allowance to be paid under sub-section (3) of section 12 to persons associated with the Central Board under sub-section

(1) of section 12;

(e) the functions to be performed by the Central Board under clause (j) of sub-section (2) of section 16;

[34][(f) the form in which and the time within which the budget to the Central Board may be prepared and forwarded to the Central Government under section 34;

(ff) the form in which the annual report of the Central Board may be prepared under section 35;}

(g) the form in which the accounts of the Central Board may be maintained under sub-section (1) of section 36.

(2) Every rule made by the Central Government under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive session, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

54. Power of State Government to make rules.—(1) Subject to the provisions of sub-section (3), the State Government may, by notification in the Official Gazette, make rules to carry out the purposes of this Act in respect of matter not falling within the purview of section 53.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely—

[35][(a) the qualifications, knowledge and experience of scientific, engineering or management aspect of pollution control required for appointment as member-secretary of a State Board constituted under the Act;]

[36][(aa) the terms and conditions of service of the Chairman and other members (other than the member-secretary) of the State Board constituted under this Act under sub-section (7) of section 7;

(b) the intervals and the time and place at which meetings of the State Board or any committee thereof shall be held and the procedure to be followed at such meetings, including the quorum necessary for the transaction of business thereat, under sub-section (1) of section 10 and under sub-section (2) of section 11;

(c) the fees and allowances to be paid to the members of a committee of the State Board, not being members of the Board under sub-section (3) of section 11;

(d) the manner in which and the purpose for which persons may be associated with the State Board under sub-section (1) of section 12;

(e) the fees and allowances to be paid under sub-section (3) of section 12 to persons associated with the State Board under sub-section (1) of section 12;

(f) the terms and conditions of service of the member-secretary of a State Board constituted under this Act under sub-section (1) of section 14;

(g) the powers and duties to be exercised and discharged by the member-secretary of a State Board under sub-section (2) of section 14;

(h) the conditions subject to which a State Board may appoint such officers and other employees as it considers necessary for the efficient performance of its functions under sub-section (3) of section 14;

(i) the conditions subject to which a State Board may appoint a consultant under sub-section (5) of section 14;

(j) the functions to be performed by the State Board under clause (i) of sub-section (1) of section 17;

(k) the manner in which any area or areas may be declared as air pollution control area or areas under sub-section (1) of section 19;

(l) the form of application for the consent of the State Board, the fees payable therefore, the period within which such application shall be made and the particulars it may contain, under sub-section (2) of section 21;

(m) the procedure to be followed in respect of an inquiry under sub-section (3) of section 21;

(n) the authorities or agencies to whom information under sub-section (1) of section 23 shall be furnished;

(o) the manner in which samples of air or emission may be taken under sub-section (1) of section 26;

(p) the form of the notice referred to in sub-section (3) of section 26;

(q) the form of the report of the State Board analyst under sub-section (1) of section 27;

(r) the form of the report of the Government analyst under sub-section (3) of section 27;

(s) the functions of the State Air Laboratory, the procedure for the submission to the said Laboratory of samples of air or emission for analysis or tests, the form of Laboratory's report thereon, the fees payable in respect of such report and other matters as may be necessary or expedient to enable that Laboratory to carry out its functions, under sub-section (2) of section 28;

(t) the qualifications required for Government analysts under sub-section (1) of section 29;

(u) the qualification required for State Board analysts under sub-section (2) of section 29;

(v) the form and the manner in which appeals may be preferred, the fees payable in respect of such appeals and the procedure to be followed by the Appellate Authority in disposing of the appeals under sub-section (3) of section 31;

[37][(w) the form in which and the time within which the budget of the State Board may be prepared and forwarded to the State Government under section 34;

(ww) the form in which the annual report of the State Board may be prepared under section 35;]

(x) the form in which the accounts of the State Board may be maintained under the sub-section (1) of section 36;

[38][(xx) the manner in which notice of intention to make a complaint shall be given under section 43;]

(y) the particulars which the register maintained under section 51 may contain;

(z) any other matter which has to be, or may be prescribed.

(3) After the first constitution of the State Board, no rule with respect to any of the matters referred to in sub-section (2) other than those referred to [39][in clause (aa) thereof], shall be made, varied, amended or repealed without consulting that Board.

[*The Schedule. J Omitted by the Air* (*Prevention and Control of Pollution*) *Amendment Act, 1987, s. 25* (*w.e.f. 1-4-1988*).

FOOTNOTES

1. 16-5-1981 : *vide* Notification No. G.S.R. 351 (E), dated 15-5-1981, Gazette of India, Extraordinary, Part II, Section 3(i) page 944.
2. Ins. by Act 47 of 1987, s. 2 (w.e.f. 1-4-1988).
3. The words in brackets "Central Board for the Prevention and Control of

Water Pollution" shall be subs. as "Central Pollution Control Board" by Act 47 of 1987, s. 2 (date to be notified).

4. Subs. by Act 47 of 1987, s. 2, for cl. (m) (w.e.f. 1-4-1988).
5. The words in brackets "State Board for the Prevention and Control of Water Pollution" shall be subs. as "State Pollution Control Board", s. 2, *ibid.* (date to be notified).
6. For sections 3 and 4, the following sections shall stand subs. by s. 3, *ibid.*, (date to be notified) namely :—
   3. Central Pollution Control Board — The Central Pollution Control Board constituted under section 3 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974), shall, without prejudice to the exercise and performance of its powers and functions under that Act, exercise the powers and perform the functions of the Central Pollution Control Board for the prevention and control of air pollution under this Act.
7. State Pollution Control Boards constituted under section 4 of Act 6 of 1974 to be State Boards under this Act.—In any State in which the Water (Prevention and Control of Pollution) Act, 1974, is in force and the State Government has constituted for that State a State Pollution Control Board under section 4 of that Act, such State Board shall be deemed to be the State Board for the Prevention and Control of Air Pollution constituted under section 5 of this Act, and accordingly that State Pollution Control Board shall without prejudice to the exercise and performance of its powers and functions under that Act, exercise the powers and perform the functions of the State Board for the prevention and control of air pollution under this Act.
8. The words in brackets "State Board for the Prevention and Control of Water Pollution" shall be substituted as "State Pollution Control Board" by Act 47 of 1987, s. 4, (date to be notified).
9. Subs. by s. 4, *ibid.*, for cl. (f) (w.e.f. 1-4-1988).
10. The words "but not for more than two terms" omitted by Act 47 of 1987, s. 5 (w.e.f. 1-4-1988).
11. Subs. by Act 47 of 1987, s. 6, for sub-section (2) (w.e.f. 1-4-1988).
12. Ins. by Act 47 of 1987, s. 7 (w.e.f. 1-4-1988).
13. S. 18 renumbered as sub-section (1) thereof by Act 47 of 1987, s. 8 (w.e.f. 1-4-1988).
14. Ins. by s. 8, *ibid.* (w.e.f. 1-4-1988).
15. Subs. by Act 47 of 1987, s. 9, for sub-section (1) (w.e.f. 1-4-1988).
16. Certain words omitted by s. 9, *ibid.*, (w.e.f. 1-4-1988).
17. Subs. by Act 47 of 1987, s. 9, for certain words (w.e.f. 1-4-1988).
18. Ins. by s. 9, *ibid.*, (w.e.f. 1-4-1988).
19. Certain words omitted by Act 47 of 1987, s. 9, (w.e.f. 1-4-1988).
20. Certain words omitted by Act 47 of 1987, s. 10 (w.e.f. 1-4-1988).
21. Ins. by s. 11, *ibid.* (w.e.f. 1-4-1988).
22. The words "air pollution control" omitted by s. 12, *ibid.*, (w.e.f. 1-4-1988).
23. Certain words omitted by Act 47 of 1987, s. 13 (w.e.f. 1-4-1988).
24. Ins. by Act 47 of 1987, s. 14 (w.e.f. 1-4-1988).
25. The words in brackets "State Board for the Prevention and Control of Water Pollution" shall be substituted as "State Pollution Control Board" by Act 47 of 1987, s. 15 (date to be notified).
26. Ins. by Act 47 of 1987, s. 16 (w.e.f. 1-4-1988).
27. Subs. by Act 47 of 1987, s. 17, for s. 35 (w.e.f. 1-4-1988).

28. Subs. by Act. 47 of 1987, s. 18, for s. 37 (w.e.f. 1-4-1988).
29. Subs. by Act 47 of 1987, s. 19 for "five hundred rupees" (w.e.f. 1-4-1988).
30. Subs. by s. 20, *ibid.*, for s. 39 (w.e.f. 1-4-1988).
31. Subs. by Act 47 of 1987, s. 21 for s. 43 (w.e.f. 1-4-1988).
32. The words in brackets "State Board for the Prevention and Control of Water Pollution" shall be substituted as "State Pollution Control Board" by Act 47 of 1987, s. 15 (date to be notified).
33. The words in brackets "State Board for the Prevention and Control of Water Pollution" shall be substituted as "State Pollution Control Board" by Act 47 of 1987, s. 15 (date to be notified).
34. Subs. by Act 47 of 1987, s. 23, for cl. (f) (w.e.f. 1-4-1988).
35. Ins. by Act 47 of 1987, s. 24 (w.e.f. 1-4-1988).
36. Act (a) renumbered as cl. (aa) by s. 24, *ibid*, (w.e.f. 1-4-1988).
37. Subs. by Act 47 of 1987, s. 24, for cl. (w) (w.e.f. 1-4-1988).
38. Ins. by Act 47 of 1987, s. 24 (w.e.f. 1-4-1988).
39. Subs. by s. 24, *ibid*, for "in clause (a)" (w.e.f. 1-4-1988).

DOCUMENT — 1 (D)

Ministry of Law and Justice
(Legislative Department)

New Delhi, the 23rd January, 1991/Magha 3, 1912 (Saka)

The following Act of parliament received the assent of the president on the 22nd January, 1991, and is hereby published for general information:—

The Public Liability Insurance Act 1991

No. 6 of 1991

[22nd January, 1991]

An Act to provide for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling any hazardous substance and for matters connected therewith or incidental thereto.

BE it enacted by Parliament in the Forty-First Year of the republic of India as follows:—

1. Short title and commencement.—(1) This Act may be called the Public Liability Insurance Act, 1991.

(2) It shall come into force on such date as the Central Government may, by notification, appoint.

2. Definitions.—In this Act, unless the context otherwise requires,—

(a) "accident" means an accident or incident occurring while handling any hazardous substance;

(b) "Collector" means the Collector having jurisdiction over the area in which the accident occurs:

(c) "handling", in relation to any hazardous substance, means the manufacture, processing, treatment, package, storage, transportation by vehicle, use collection, destruction, conversion, offering for sale, transfer or the like of such hazardous substance;

(d) "hazardous substance" means any substance or preparation which is defined as hazardous substance under the Environment (Protection) Act, 1986 and exceeding such quantity as may be specified, by notification, by the Central Government;

(29 of 1986)

(e) "insurance" means insurance against liability under sub-section

(1) of Section 3;

(f) "notification" means a notification published in the Official Gazette;

(g) "owner" means a person who has control over handling any hazardous substance;

(h) "prescribed" means prescribed by rules made under this Act;

(i) "rules" means rules made under this Act;

(j) "vehicle" means any mode of surface transport other than railways.

3. Liability to give relief in certain cases on principle of no fault.—(1) Where death or injury to any person (other than a workman) or damage to any property has resulted from an accident, the owner shall be liable to give such relief as is specified in the Schedule for such death, injury or damage.

(2) In any claim for relief under sub-section (1) (herein after referred to in this Act as claim for relief), the claimant shall not be required to plead and establish that the death, injury or damage in respect of which the claim has been made was due to any wrongful act, neglect or default of any person.

Explanation.—For the purpose of this section.—

(i) "Workman" has the meaning assigned to it in the Workmen's Compensation Act, 1923; (8 of 1923)

(ii) "injury" includes permanent total or permanent partial disability or sickness resulting out of an accident.

4. Duty of owner to take out insurance policies.—(1) Every owner shall take out, before he starts handling any hazardous substance, one or more insurance policies providing for contracts of insurance whereby he is insured against liability to give relief under sub-section (1) of Section 3:

Provided that any owner handling any hazardous substance immediately before the commencement of this Act shall take out such insurance policy or policies as soon as may be and in any case within a period of one year from such commencement.

(2) Every owner shall get the insurance policy, referred to in sub-section (1) renewed from time to time before the expiry of the period of validity thereof so that the insurance policies may remain in force throughout the period during which such handling is continued.

(3) The Central Government may, by notification, exempt from the operation of sub-section (1) any owner, namely—

(a) the Central Government;
(b) any State Government;
(c) any corporation owned or controlled by the Central Government or a State Government; or
(d) any local authority:

Provided that no such order shall be made in relation to such owner unless a fund has been established and is maintained by that owner in accordance with the rules made in this behalf for meeting any liability under sub-section (1) of Section 3.

5. Verification and publication of accident by Collector.—Whenever it comes to the notice of the Collector that a accident has occurred at any place within his jurisdiction, he shall verify the occurrence of such accident and cause publicity to be given in such manner as he deems fit for inviting application under sub-section (1) of Section 6.

6. Application for claim for relief.—(1) An application for claim for relief may be made—

(a) by the person who has sustained the injury;
(b) by the owner of the property to which the damage has been caused;
(c) where death has resulted from the accident, by all or any of the legal representatives of the deceased; or
(d) by any agent duly authorised by such person or owner of such property or all or any of the legal representatives of the deceased, as the case may be:

Provided that where all legal representatives of the deceased have not joined in any such application for relief, the application shall be made on behalf of or for the benefit of all the legal representatives of the deceased and the legal representatives who have not so joined shall be impleaded a respondents to the application.

(2) Every application under sub-section (1) shall be made to the Collector and shall be in such form contain such particulars and shall be accompanied by such documents as may be prescribed.

(3) No application for relief shall be entertained unless it is made within five years of the occurrence of the accident.

7. Award of relief.—(1) On receipt of an application under sub-section (1) of Section 6, the Collector shall, after giving notice of the application to the owner and after giving the parties an opportunity of being heard, hold an injuiry into the claim or, each of the claims, and may make an award determining the amount of relief which appears to him to be just and specifying the person or persons to whom such amount of relief shall be paid.

(2) The Collector shall arrange to deliver copies of the award to the parties concerned expeditiously and in any case within a period of fifteen days from the date of the award.

(3) When an award is made under this section, the owner or the insurer, as the case may be, who is required to pay any amount in terms of such award shall, within thirty days of the date of announcement of the award, deposit the entire amount so awarded in such manner as the Collector may direct.

(4) In holding any injuiry under sub-section (1), the Collector may, subject to any rules made in this behalf, follow such summary procedure as he thinks fit.

(5) The Collector shall have all the powers of a Civil Court for the purpose of taking evidence on oath and of enforcing the attendance of witnesses and of compelling the discovery and production of documents and material objects and for such other purposes as may be prescribed; and the Collector shall be deemed to be a Civil Court for all the purposes of Section 195 and chapter XXVI of the code of Criminal Procedure, 1973.

(2 of 1974)

(6) Where the insurer or the owner against whom the award is made under sub-section (1) fails to deposit the amount of such award within the period specified under sub-section (3), such amount shall be recoverable from the owner, or as the case may be, the insurer as arrears of land revenue or of public demand.

(7) A claim for relief in respect of death of, or injury to, any person or damage to any property shall be disposed of as expeditiously as possible and every endeavour shall be made to dispose of such claim within three months of the receipt of the application for relief under sub-section (1) of Section 6.

8. Provisions as to other right to claim compensation for death, etc.—(1) The right to claim relief under sub-section (1) of Section 3 in respect of death of, or injury to, any person or damage to any property shall be in addition to any other right to claim compensation in respect thereof under any other law for the time being in force.

(2) Notwithstanding anything contained in sub-section (1), where in respect of death of, or injury to, any person or damage to any property, the owner, liable to give claim for relief, is also liable to pay compensation under any other law, the amount of such compensation shall be reduced by the amount of relief paid under this Act.

9. Power to call for information.—Any person authorised by the

Central Government may, for the purposes of ascertaining whether any requirements of this Act or of any rule or of any direction given under this Act have been complied with, require any owner to submit to that person such information as that person may reasonably think necessary.

10. Power of entry and inspection.—Any person, authorised by the Central Government in this behalf, shall have a right to enter, at all reasonable times with such assistance as he considers necessary, any place, premises or vehicle, where hazardous substance is handled for the purpose of determining weather any provisions of this Act or of any rule or of any direction given under this Act is being or has been complied with and such owner is bound to render all assistance to such person.

11. Power of search and seizure.—(1) If a person, authorised by the central government in this behalf, has reason to believe that handling of any hazardous substance is taking place in any place, premises or vehicle, in contravention of sub-section (1) of Section 4, he may enter into and search such place, premises or vehicle for such handling of hazardous substance.

(2) Where, as a result of any search under sub-section (1) any handling of hazardous substance has been found in relation to which contravention of sub-section (1) of Section 4 has taken place, he may seize such hazardous substance and other things which, in his opinion, will be useful for, or relevant to, any proceeding under this Act:

> Provided that where it is not practicable to seize any such substance or thing, he may serve on the owner an order that the owner shall not remove, part with, or otherwise deal with, the hazardous substance and such other things except with the previous permission of that person.

(3) He may, if he has reason to believe that it is expedient so to do to prevent an accident dispose of the hazardous substance seized under sub-section (2) immediately to such manner as he may deem fit.

(4) All expenses incurred by him in the disposal of hazardous substances under sub-section (3) shall be recoverable from the owner as arrears of land revenue or of public demand.

12. Power to give directions.—Notwithstanding anything contained in any other law but subject to the provisions of this Act, the Central Government may, in exercise of its powers and performance of its functions under this Act, issue such directions in writing as it may deem fit for the purposes of this Act to any owner or any person, officer, authority or agency and such owner, person, officer, authority or agency shall be bound to comply with such directions.

Explaination:—For the removal of doubts, it is hereby declared that the power to issue directions under this section includes the power to direct—

(a) prohibition or regulation of the handling of any hazardous substance; or

(b) stoppage or regulations of the supply of electricity, water or any other service.

13. Power to make application to courts for restraining owner from handling hazardous substance.—(1) If the Central Government or any person authorised by that Government in this behalf has reason to believe that any owner has been handling any hazardous substance in contravention of any of the provisions of this Act, that Government or, as the case may be, that person may make an application to a court, not inferior to that of a Metropolitan Magistrate or a Judicial Magistrate of first class for restraining such owner from such handling.

(2) On receipt of the application under sub-section (1), the court may make such order as it deems fit.

(3) Where under sub-section (2), the court makes an order restraining any owner from handling hazardous substance, it may, in that order—

(a) direct such owner to desist from such handling;

(b) authorise the Central Government or, as the case may be the person referred to in sub-section (1), if the direction under clause (a) is not complied with by the owner to whom such direction is issued to implement the direction in such manner as may be specified by the court.

(4) All expenses incurred by the Central Government, or as the case may be, the person in implementing the directions of Court under clause (b) of sub-section (3), shall be recoverable from the owner as arrears of land revenue or of public demand.

14. Penalty for contravention of sub-section (1) or sub-section (2) of Section 4 or failure to comply with directions under Section 12.—(1) Whoever contravenes any of the provisions of sub-section (1) or sub-section (2) of Section 4 or fails to comply with any directions issued under Section 12, he shall be punishable with imprisonment for a term which shall not be less than one year and six months but which may extend to six years, or with fine which shall not be less than one lakh rupees, or with both.

(2) Whoever, having already been convicted of an offence under sub-section (1), is convicted for the second offence or any offence subsequent to the second offence, he shall be punishable with imprisonment

for a term which shall not be less than two years but which may extend to seven years and with fine which shall not be less than one lakh rupees.

(3) Nothing contained in Section 360 of the Code of Criminal Procedure, 1973, or in the Probation of Offenders Act, 1958, shall apply to a person convicted of an offence under this Act unless such person is under eighteen years of age.

(2 of 1974, 20 of 1958)

15. Penalty for failure to comply with direction under Section 9 or order under Section 11 or obstructing any person in discharge of his functions under Section 10 or 11.—If any owner fails to comply with direction issued under Section 9 or fails to comply with order issued under sub-section (2) of Section 11, or obstructs any person in discharge of his functions under Section 10 or sub-section (1) or sub-section (3) of Section 11, he shall be punishable with imprisonment which may extend to three months, or with fine which may extend to ten thousand rupees, or with both.

16. Offences by companies.—(1) Where any offence under this Act has been committed by a company, every person who, at the time the offence was committed, was directly in charge of, and was responsible to, the company for the conduct of the business of the company, as well as the company shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

> Provided that nothing contained in this sub-section shall render any such person liable to any punishment provided in this Act, if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any director, manager, secretary or other officer of the company, such director, manager, secretary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

Explanation.—For the purposes of this section—

(a) "company" means any body corporate and includes a firm or other association of individuals;

(b) "director", in relation to a firm, means a partner in the firm.

17. Offences by Government Departments.—Where an offence under this Act has been committed by any Department of Government, the Head of the Department shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this section shall render such Head of the Department liable to any punishment if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

18. Cognizance of Offences.—No court shall take cognizance of any offence under this Act except on a complaint made by—

(a) the Central Government or any authority or officer authorised in this behalf by that Government; or

(b) any person who has given notice of not less than sixty days in the manner prescribed, of the alleged offence and of his intention to make a complaint, to the Central Government or the authority or officer authorised as aforesaid.

19. Power to delegate.—The Central Government may, by notification, delegate, subject to such conditions and limitations as may be specified in the notification, such of its powers and functions under this Act (except the power under Section 23) as it may deem necessary of expedient to any person (including any officer, authority or other agency).

20. Protection of action taken in good faith.—No suit, prosecution or other legal proceeding shall lie against the Government of the person, officer, authority or other agency in respect of anything which is done or intended to be done in good faith in pursuance of this Act or the rules made or orders or directions issued thereunder.

21. Advisory Committee.—(1) The Central Government may, from time to time, constitute an Advisory Committee on the matters relating to the insurance policy under this Act.

(2) The Advisory Committee shall consist of—

(a) three officers representing the Central Government;

(b) two persons representing the insurers;

(c) two persons representing the owners; and

(d) two persons from amongst the experts of insurance or hazardous substances.

to be appointed by the Central Government.

(3) The Chairman of the Advisory Committee shall be one of the members representing the Central Government, nominated in this behalf by that Government.

22. Effect of other laws.—The provisions of this Act and any rules made thereunder shall have effect notwithstanding anything inconsistent therewith contained in any other law.

23. Power to make rules.—(1) The Central Government may, by notification, make rules for carrying out the purposes of this Act.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:—

(a) establishment and maintenance of fund under sub-section (3) of Section 4;

(b) the form of application and the particulars to be given therein and the documents to accompany such application under sub-section (2) of Section 6;

(c) the procedure for holding an inquiry under sub-section (4) of Section 7;

(d) the purposes for which the Collector shall have powers of a Civil Court under sub-section (5) of Section 7;

(e) the manner in which notice of the offence and of the intention to make a complaint to the Central Government shall be given under clause (b) of Section 18;

(f) any other matter which is required to be, or may be, prescribed.

(3) Every rule made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

The Schedule

[See Section 3(1)]

(i) Reimbursement of medical expenses incurred up to a maximum of Rs. 12,500 in each case.

(ii) For total accidents the relief will be Rs. 25,000 per person in addition to reimbursement of medical expenses, if any, incurred on the victim up to a maximum of Rs. 12,500.

(iii) For permanent total or permanent partial disability or other injury or sickness, the relief will be (a) reimbursement of medical expenses incurred, if any, up to a maximum of Rs. 12,500 in each case and (b) cash relief on the basis of percentage of disablement as certified by an authorised physician. The relief for total permanent disability will be Rs. 25,000.

(iv) For loss of wages due to temporary partial disability which reduces the earning capacity of the victim, there will be a fixed monthly relief not exceeding Rs. 1,000 per month up to a maximum of 3 months: provided the victim has been hospitalised for a period exceeding 3 days and is above 16 years of age.

(v) Upto Rs. 6,000 depending on the actual damage, for any damage to private property.

K.L. Mohanpuria
Additional Secy. to the Govt. of India

DOCUMENT — 2

The Environment (Protection) Act, 1986

(No. 29 of 1986)[1]

[23rd May, 1986]

An Act to provide for the protection and improvement of environment and for matters connected therewith

Whereas decisions were taken at the United Nations Conference on the Human Environment held at Stockholm in June 1972, in which India participated, to take appropriate steps for the protection and improvement of human environment:

And whereas it is considered necessary further to implement the decisions aforesaid insofar as they relate to the protection and improvement of environment and the prevention of hazards to human beings, other living creatures, plants and property;

Be it enacted by Parliament in the Thirty-seventh Year of the Republic of India as follows:

STATEMENT OF OBJECTS AND REASONS

Concern over the state of environment has grown, the world over since the sixties. The decline in environmental quality has been evidenced by increasing pollution loss of vegetal cover and biological diversity, excessive concentrations of harmful chemicals in the ambient atmosphere and in food chains, growing risks of environmental accidents and threats to life support systems. The world community's resolve to protect and enhance the environmental quality found expression in the decisions taken at the United Nations Conference on the Human Environment held in Stockholm in June 1972. Government of India participated in the Conference and strongly voiced the environmental concerns. While several measures have been taken for environmental protection both before and after the Conference, the need for a general legislation further to implement the decisions of the Conference has become increasingly evident.

"Although there are existing laws dealing directly or indirectly, with several environmental matters, it is necessary to have a general legislation for environmental protection. Existing laws generally focus on specific types of pollution or on specific categories of hazardous substances. Some major areas of environmental hazards are not covered. There also exist uncovered gaps in areas of major environmental hazards. " There are inadequate linkages in handling matters of industrial and environmental safety. Control mechanisms to guard against slow, insidious build up of hazardous substances, especially new chemicals, in the environment are weak. Because of a multiplicity of regulatory agencies, there is need for an authority which can assume the lead role for studying, planning and implementing long-term requirements of environmental safety and to give direction to, and co-ordinate a system of speedy and adequate response to emergency situations threatening the environment.

In view of what has been stated above, there is urgent need for the enactment of a general legislation on environmental protection which, *inter alia*, should enable co-ordination of activities of the various regulatory agencies, creation of an authority or authorities with adequate powers for environmental protection, regulation of discharge of environmental pollutants and handling of hazardous substances, speedy response in the event of accidents threatening environment and deterrent punishment to those who endanger human environment, safety and health.

CHAPTER I

Preliminary

1. Short title, extent and commencement.—(1) This Act may be called the Environment (Protection) Act, 1986.

(2) It extends to the whole of India.

(3) It shall come into force on such date as the Central Government may, by notification in the official Gazette, appoint and different dates may be appointed for different provisions of this Act and for different areas.

2. Definitions.—In this Act, unless the context otherwise requires:

(a) "environment" includes water, air and land and the inter-relationship which exists among and between water, air and land and property;

(b) "environmental pollutant" means any solid, liquid or gaseous substance present in such concentration as may be, or tend to be injurious to environment;

(c) "environmental pollution" means the presence in the environment of any environmental pollutant;

(d) "handling", in relation to any substance, means the manufacture, processing, treatment, package, storage, transportation, use, collection, destruction, conversion, offering for sale, transfer or the like of such substance;

(e) "hazardous substance" means any substance or preparation which, by reason of its chemical or physico-chemical properties or handling, is liable to cause harm to human beings, other living creatures, plants, micro-organism, property or the environment;

(f) "occupier", in relation to any factory or premises, means a person who has control over the affairs of the factory or the premises and includes, in relation to any substance, the person in possession of the substance;

(g) "prescribed" means prescribed by rules made under this Act.

CHAPTER II

General Powers of the Central Government

3. Power of Central Government to take measures to protect and improve environment.—(1) Subject to the provisions of this Act the Central Government shall have the power to take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing, controling and abating environmental pollution.

(2) In particular, and without prejudice to the generality of the provisions of sub-section (1), such measures may include measures with respect to all or any of the following matters, namely:

(i) co-ordination of actions by the State Governments, officers and other authorities:

  (a) under this Act, or the rules made thereunder; or

  (b) under any other law for the time being in force which is relatable to the objects of this Act;

(ii) planning and execution of a nation-wide programme for the prevention, control and abatement of environmental pollution;

(iii) laying down standards for the quality of environment in its various aspects.

(iv) laying down standards for emission or discharge of environmental pollutants from various sources whatsoever;
Provided that different standards for emission or discharge may be laid down under this clause from different sources having regard

to the quality or composition of the emission or discharge of environmental pollutants from such sources;

(v) restriction of areas in which any industries, operations, or processes, or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards;

(vi) laying down procedures and safeguards for the prevention of accidents which may cause environmental pollution and remedial measures for such accidents;

(vii) laying down procedures and safeguards for the handling of hazardous substances;

(viii) examination of such manufacturing processes, materials and substances as are likely to cause environmental pollution:

(ix) carrying out and sponsoring investigations and research relating to problems of environmental pollution;

(x) inspection of any premises, plant, equipment, machinery, manufacturing or other processes, materials or substances and giving, by order, of such directions to such authorities, officers or persons as it may consider necessary to take steps for the prevention, control and abatement of environmental pollution;

(xi) establishment or recognition of environmental laboratories and institutes to carry out the functions entrusted to such environmental laboratories and institutes under this Act;

(xii) collection and dissemination of information in respect of matters relating to environmental pollution;

(xiii) prevention of manuals, codes or guides relating to the prevention, control and abatement of environmental pollution;

(xiv) such other matters as the Central Government deems necessary or expedient for the purpose of securing the effective implementation of the provisions of this Act.

(3) The Central Government may, if it considers it necessary or expedient so to do for the purposes of this Act, by order, published in the official Gazette, constitute an authority or authorities by such name or names as may be specified in the order for the purpose of exercising and performing such of the powers and functions (including the power to issue directions under section 5) of the Central Government under this Act and for taking measures with respect to such of the matters referred to in sub-section (2) as may be mentioned in the order and subject to the supervision and control of the Central Government and the provisions of such order, such authority or authorities may exercise the powers or perform the functions or take the measures so mentioned in the order as

if such authority or authorities had been empowered by this Act to exercise those powers or perform those functions or take such measures.

4. Appointment of officers and their powers and functions.—(1) Without prejudice to the provisions of sub-section (3) of Section 3, the Central Government may appoint officers with such designations as it thinks fit for the purposes of this Act and may entrust to them such of the powers and functions under this Act as it may deem fit.

(2) The officers appointed under sub-section (1) shall be subject to the general control and direction of the Central Government or, if so directed by that Government, also of the authority or authorities, if any, constituted under sub-section (3) of Section 3 or of any other authority or officer.

5. Power to give directions.—Notwithstanding anything contained in any other law but subject to the provisions of this Act, the Central Government may, in the exercise of its powers and performance of its functions under this Act, issue directions in writing to any person, officer or any authority, and such person, officer or authority shall be bound to comply with such directions.

Explanation.—For the avoidance of doubts, it is hereby declared that the power to issue directions under this section includes the power to direct:

(a) the closure, prohibition or regulation of any industry, operation or process; or

(b) stoppage or regulation of the supply of electricity or water or any other service.

6. Rules to regulate environmental pollution.—(1) The Central Government may, by notification in the official Gazette, make rules in respect of all or any of the matters referred to in Section 3.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:

(a) the standards of quality of air, water or soil for various areas and purposes;

(b) the maximum allowable limits of concentration of various environmental pollutants (including noise) for different areas;

(c) the procedures and safeguards for the handling of hazardous substances;

(d) the prohibition and restrictions on the handling of hazardous substances in different areas;

(e) the prohibition and restrictions on the location of industries and the carrying on of processes and operations in different areas;

(f) the procedures and safeguards for the prevention of accidents which may cause environmental pollution and for providing for remedial measures for such accidents.

CHAPTER III

Prevention, Control and Abatement of Environmental Pollution

7. Persons carrying on industry, operation, etc., not to allow emission or discharge of environmental pollutants in excess of the standards.—No person carrying on any industry, operation or process shall discharge or emit or permit to be discharged or emitted any environmental pollutant in excess of such standards as may be prescribed.

8. Persons handling hazardous substances to comply with procedural safeguards.—No person shall handle or cause to be handled any hazardous substance except in accordance with such procedure and after complying with such safeguards as may be prescribed.

9. Furnishing of information to authorities and agencies in certain cases.—(1) Where the discharge of any environmental pollutant in excess of the prescribed standards occurs or is apprehended to occur due to any accident or other unforeseen act or event, the person responsible for such discharge and the person in charge of the place at which such discharge occurs or is apprehended to occur shall be bound to prevent or mitigate the environmental pollution caused as a result of such discharge and shall also forthwith:

(a) intimate the fact of such occurrence or apprehension of such occurrence; and

(b) be bound, if called upon, to render all assistance, to such authorities or agencies as may be prescribed.

(2) On receipt of information with respect to the fact or apprehension of any occurrence of the nature referred to in sub-section (1), whether through intimation under that sub-section or otherwise, the authorities or agencies referred to in sub-section (1) shall, as early as practicable, cause such remedial measures to be taken as are necessary to prevent or mitigate the environmental pollution.

(3) The expenses, if any, incurred by any authority or agency with respect to the remedial measures referred to in sub-section (2), together with interest (at such reasonable rate as the Government may, by order, fix) from the date when a demand for the expenses is made until it is paid

may be recovered by such authority or agency from the person concerned as arrears of land revenue or of public demand.

10. Powers of entry and inspection.—(1) Subject to the provisions of this section, any person empowered by the Central Government in this behalf shall have a right to enter, at all reasonable times with such assistance as he considers necessary, any place—

(a) for the purpose of performing any of the functions of the Central Government entrusted to him;

(b) for the purpose of determining whether and if so in what manner any such functions are to be performed or whether any provisions of this Act or the rules made thereunder or any notice, order, direction or authorisation served, made, given or granted under this Act is being or has been complied with;

(c) for the purpose of examining and testing any equipment, industrial plan, record, register, document or any other material object or for conducting a search of any building in which he has reason to believe that an offence under this Act or the rules made thereunder has been or is being or is about to be committed and for seizing any such equipment, industrial plant, record, register, document or other material object if he has reasons to believe that it may furnish evidence of the commission of an offence punishable under this Act or the rules made thereunder or that such seizure is necessary to prevent or mitigate environmental pollution.

(2) Every person carrying on any industry, operation or process or handling any hazardous substance shall be bound to render to all assistance to the person empowered by the Central Government under sub-section (1) for carrying out the functions under that sub-section and if he fails to do so without any reasonable cause or excuse, he shall be guilty of an offence under this Act.

(3) If any person wilfully delays or obstructs any person empowered by the Central Government under sub-section (1) in the performance of his functions, he shall be guilty of an offence under this Act.

(4) The provisions of the Code of Criminal Procedure, 1973 (2 of 1974), or, in relation to the State of Jammu and Kashmir, or any area in which that Code is not in force, the provisions of any corresponding law in force in that State or area shall, so far as may be, apply to any search or seizure under this section as they apply to any search or seizure made under the authority of a warrant issued under Section 94 of the said Code or, as the case may be under the corresponding provision of the said law.

11. Power to take sample and procedure to be followed in con-

nection therewith.—(1) The Central Government or any officer empowered by it in this behalf, shall have power to take, for the purpose of analysis, samples or air, water, soil or other substance from any factory, premises or other place in such manner as may be prescribed.

(2) The result of any analysis of a sample taken under sub-section (1) shall not be admissible in evidence in any legal proceeding unless the provisions of sub-sections (3) and (4) are complied with.

(3) Subject to the provisions of sub-section (4), the person taking the sample under sub-section (1) shall—

(a) serve on the occupier or his agent or person in charge of the place, a notice, then and there, in such form as may be prescribed, of his intention to have it so analysed;

(b) in the presence of the occupier or his agent or person, collect a sample for analysis;

(c) cause the sample to be placed in container or containers which shall be marked and sealed and shall also be signed both by the person taking the sample and the occupier or his agent or person;

(4) When a sample is taken for analysis under sub-section (1) and the person taking the sample serves on the occupier or his agent or person, a notice under Cl. (*a*) of sub-section (3), then,—

(a) in case where the occupier, his agent or person wilfully absents himself, the person taking the sample shall collect the sample for analysis to be placed in a container or containers which shall be marked and sealed and shall also be signed by the person taking the sample, and

(b) in a case where the occupier or his agent or person present at the time of taking the sample refuses to sign the marked and sealed container or containers of the sample as required under Cl. (*e*) of sub-section (3), the marked and sealed container or containers shall be signed by the person taking the samples,

and the container or containers shall be sent without delay by the person taking the sample for analysis to the laboratory established or recognised under Section 12 and such person shall inform the Government Analyst appointed or recognised under Section 13 in writing, about the wilful absence of the occupier or his agent or person, or, as the case may be, his refusal to sign the container or containers.

Lifting of samples.—The learned Magistrate observed that as no presence was put in on behalf of the Company, so the question of there being any request by the Company for dividing the samples into two parts did not arise. The conclusion of the learned Magistrate is not sustainable. The learned Magistrate did not deal with the matter on he basis of the allegations which are in the nature of the pleadings of the parties. In view of the finding that a legal representative of the company was duly present as the time when the sample was lifted. Further in view of the said pleadings of the parties it has to be taken that a demand was also made by the said representative to the officials of the Board to divide the sample into two parts and to get the same analysed in accordance with law. But that request was not acceded. Thus the officials of the Board were not justified in getting the sample analysed from a laboratory only recognised by the Board instead of getting the same analysed from the laboratory of the Delhi Administration and without complying with the requirement of law. Consequently the impugned order is bad and is liable to be set aside.

12. Environmental laboratories.—(1) The Central Government may, by notification in the official Gazette,—

(a) established one or more environmental laboratories;

(b) recognise one or more laboratories or institutes as environmental laboratories to carry out the functions entrusted to an environmental laboratory under this Act.

(2) The Central Government may, by notification in the official Gazette, make rules specifying—

(a) the functions of the environmental laboratory;

(b) the procedure for the submission to the said laboratory of samples of air, water, soil or other substance for analysis or tests, the form of the laboratory report thereon and the fees payable of such report;

(c) such other matters as may be necessary or expedient to enable that laboratory to carry out its functions.

13. Government Analysts.—The Central Government may, by notification in the official Gazette, appoint or recognise such persons as it thinks fit and having the prescribed qualifications to be Government Analysts for the purpose of samples of air, water, soil or other substance sent for analysis to any environmental laboratory established or recognised under sub-section (1) of Section 12.

14. Reports of Government Analysts.—Any document purporting to be a report signed by a Government analyst may be used as evidence of the facts stated therein in any proceeding under this Act.

15. Penalty for contravention of the provisions of the Act and the rules, orders and directions.—(1) Whoever fails to comply with or contravenes any of the provisions of this Act, or the rules made or orders or directions issued thereunder, shall, in respect of each such failure or contravention, be punishable with imprisonment for a term which may extend to five year or with fine which may extend to one lakh rupees, or with both, and in case the failure or contravention continues, with additional fine which may extend to five thousand rupees for every day during which such failure or contravention continues after the conviction for the first such failure or contravention.

(2) If the failure or contravention referred to in sub-section (1) continues beyond a period of one year after the date of conviction, the offender shall be punishable with imprisonment for a term which may extend to seven years.

16. Offences by companies.—(1) Where any offence under this Act has been committed by a company, every person who, at the time the offence was committed, was directly in charge of, and was responsible to, the company for the conduct of the business of the company, as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

> Provided that nothing contained in this sub-section shall render any such person liable to any punishment provided in this Act, if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), which an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any director, mammer, secretary or other officer of the company, such director, manager, secretary or other officer shall also deemed to be guilty of that offence shall be liable to be proceeded against and punished accordingly.

Explanation.—For the purposes of this section,—

(a) "company" means any body corporate and includes a firm or other association of individuals;

(b) "director", in relation to a firm, means a partner in the firm.

Rule of evidence.—It is well settled that a rule of evidence or a deeming fiction of the law are not to be pleaded as such. No principle warrants that either in a complaint or in a first information report the literal words of the statute must be incorporated or what is even important is that the rule of evidence with regard to burden of proof and a deeming fiction of guilt should be quoted at the foundational stage. Therefore, to require that the complaint or the first information report must inflexibly plead consent, connivance or negligence of the officers at the threshold stage is patently fallacious. Seen broadly, the deeming fiction is primarily one of evidence and proof and not of the literal formalities of pleading, which are foreign to the criminal law. Indeed, it must be noticed that in a particular case the prosecution charge may be one of direct, deliberate and wilful commission of the offence by the company and its officials. In such a situation, to require that they should plead at the outset that it was only by way of connivance or neglect would be an absurdity and indeed destructive or contrary to the case set up.

17. Offences by Government Department.—(1) Where an offence under this Act has been committed by any Department of Government, the Head of the Department shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this section shall render such Head of the Department liable to any punishment if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a Department of Government and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any officer, other than the Head of the Department, such officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

CHAPTER IV

Miscellaneous

18. Protection of action taken in good faith.—No suit, prosecution or other legal proceeding shall lie against the Government or any officer or other employee of the Government or any authority constituted under this Act or any member, officer or other employee of such authority in respect of anything which is done or intended to be done in good faith in pursuance of this Act or the rules made or orders or directions issued thereunder.

19. Cognizance of offences.—No Court shall take cognizance of any offence under this Act except on a complaint made by—

(a) the Central Government or any authority or officer authorised in this behalf by that Government; or

(b) any person who has given notice of not less than sixty days, in the manner prescribed, of the alleged offence and of his intention to make a complaint, to the Central Government or the authority or officer authorised as aforesaid.

20. Information, reports or returns.—The Central Government may, in relation to its functions under this Act, from time to time, require any person, officer, State Government or other authority to furnish to it or any prescribed authority or officer any reports, returns, statistics, accounts and other information and such person, officer, State Government or other authority shall be bound to do so.

21. Members, officers and employees of the authority constituted under Section 3 to be public servants.—All the members of the authority, constituted, if any, under Section 3 and all officers and other employees of such authority when acting to purporting to act in pursuance of any provisions of this Act or the rules made or order or directions issued thereunder shall be deemed to be public servants within the meaning of Section 21 of the Indian Penal Code.

22. Bar of jurisdiction.—No civil court shall have jurisdiction to entertain any suit or proceeding in respect of anything done, action taken or order or direction issued by the Central Government or any other authority or officer in pursuance of any power conferred by or in relation to its or his functions under this Act.

23. Power to delegate.—Without prejudice to the provisions of sub-section (3) of Section 3, the Central Government may, by notification in the official Gazette, delegate, subject to such conditions and limitations as may be specified in the notification, such of its powers and functions under this Act, [except the power to constitute an authority under sub-section (3) of Section 3 and to make rules under Section 25] as it may deem necessary or expedient, to any officer, State Government or other authority.

24. Effect of other laws.—(1) Subject to the provisions of sub-section (2), the provisions of this Act and the rules or orders made therein shall have effect notwithstanding anything inconsistent therewith contained in any enactment other than this Act.

(2) Where any act or omission constitutes an offence punishable under this Act and also under any other Act then the offender found guilty of such offence shall be liable to be punished under the other Act and not under this Act.

25. Power to make rules.—The Central Government may, by notification in the official Gazette, make rules for carrying out the purposes of this Act.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:

(a) the standards in excess of which environmental pollutants shall not be discharged or emitted under Section 7;

(b) the procedure in accordance with and the safeguards in compliance with which hazardous substances shall be handled or cause to be handled under Section 8;

(c) the authorities or agencies to which intimation of the fact of occurrence or apprehension of occurrence of the discharge of any environmental pollutant in excess of the prescribed standards shall be given and to whom all assistance shall be bound to be rendered under sub-section (1) of Section 9;

(d) the manner in which samples of air, water, soil or other substance for the purpose of analysis shall be taken under sub-section (1) of Section 11;

(e) the form in which notice of intention to have a sample analysed shall be served under Cl. (a) of sub-section (3) of Section 1]];

(f) the functions of the environmental laboratories, the procedure for the submission to such laboratories of samples of air, water, soil and other substances for analysis of test; the form of laboratory report; the fees payable for such report and other matter to enable such laboratories to carry out their functions under sub-section (2) of Section 12;

(g) the qualifications of Government Analyst appointed or recognised for the purpose of analysis of samples of air, water, soil or other substances under Section 13;

(h) the manner in which notice of the offence and of the intention to make a complaint to the Central Government shall be given under Cl. (b) of Section 19;

(i) the authority or officer to whom any reports, returns, statistics, accounts and other information shall be furnished under Section 20;

(j) any other matter which is required to be, or may be, prescribed.

26. Rules made under this Act to be laid before Parliament.— Every rule made under this Act shall be laid; as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in marking any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

DOCUMENT — 3 (A)

The National Environment Tribunal Act, 1995

(27 of 1995)

[17th June, 1995]

An Act to provide for strict liability for damages arising out of any accident occurring while handling any hazardous substance and for the establishment of a National Environment Tribunal for effective and expeditious disposal of cases arising from such accident, with a view to giving relief and compensation for damages to persons, property and the environment and for matters connected therewith or incidental thereto.

Whereas decisions were taken at the United Nations Conference on Environment and Development held at Rio de Janeiro in June, 1992, in which India participated, calling upon the States to develop national laws regarding liability and compensation for the victims of pollution and other environmental damages;

And whereas it is considered expedient to implement the decisions of the aforesaid Conference so far as they relate to the protection of environment and payment of compensation for damage to persons, property and the environment while handling hazardous substances;

Be it enacted by Parliament in the Forty-Sixth Year of the Republic of India as follows:—

CHAPTER I

Preliminary

1. Short title and commencement.—(1) This Act may be called the National Environment Tribunal Act, 1995.

(2) It shall come into force on such date or dates as the Central Government may, by notification, appoint, and different dates may be appointed for different States and any reference in any provision of this Act to the commencement of this Act shall be construed in relation to any State or Part thereof as Reference to the coming into force of that provisions in that States or part thereof.

2. Definitions.—In this Act, unless the context otherwise requires,—

(a) "accident" means an accident involving a fortuitous or sudden or unintended occurrence while handling any hazardous substance resulting in continuous or intermittent or repeated exposure to death of, or injury to, any person or damage to any property or environment but does not include an accident by reason only of war or radio-activity;

(b) "Bench" means a Bench of the Tribunal;

(c) "Chairperson" means the Chairperson of the Tribunal;

(d) "environment" includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property;

(e) "handling", in relation to any hazardous substance, means the manufacture, processing, treatment, package, storage transportation by vehicle, use, collection, destruction, conversion, offering for sale, transfer or the like of such hazardous substance;

(f) "hazardous substance" means any substance or preparation which is defined as hazardous substance in the Environment (Protection) Act, 1986, (29 of 1986) and exceeding such quantity as specified by the central Government under the Public Liability Insurance Act, 1991 (6 of 1991);

(g) "Judicial Members" means a Member of the Tribunal appointed as such under this Act, and includes the Chairperson or a Vice-Chairperson who possesses any of the qualifications specified in sub-section (3) of section 10;

(h) "Member" means a Member (whether Judicial or Technical) of the Tribunal and includes the Chairperson and a Vice-Chairperson;

(i) "notification" means a notification published in the Official Gazette;

(j) "prescribed" means prescribed by rules made under this Act;

(k) "rules" means the rules made under this Act;

(l) "Technical Member" means a Member of the Tribunal who is not a Judicial Member within the meaning of clause (g);

(m) "Tribunal" means the National Environment Tribunal established under section 8;

(n) "Vice Chairperson" means the Vice-Chairperson of the Tribunal.

Explaination.—In the case of the Tribunal having two or more Vice-Chairpersons, references to the Vice-Chairperson in this Act shall be construed as a reference to each of those Vice-Chairpersons;

(o) "owner" means a person who owns, or has control over handling, any hazardous substance at the time of accident and includes—

(i) in the case, of a firm, any of its partners;

(ii) in the case of an association, any of its members; and

(iii) in the case of a company, any of its directors, managers, secretaries or other officers who is directly in charge of, and is responsible to, the company for the conduct of the business of the company.

CHAPTER II

Compensation for Death of or Injury to, A Person and Damage to Property and Environment

3. Liability to pay compensation in certain cases on principle of no fault.—(1) Where death of, or injury to, any person (other than a workman) or damage to any property or environment has resulted from an accident, the owner shall be liable to pay compensation for such death, injury or damage under all or any of the heads specified in the Schedule.

(2) In any claim for compensation under sub-section (1), the claimant shall not be required to plead and establish that the death injury or damage in respect of which the claim has been made was due to any wrongful act, neglect or default or any person.

Explanation.—For the purposes of this section—

(i) "workman" has the meaning assigned to it in the Workmen's Compensation Act, 1923;

(ii) "injury" includes permanent total or permanent partial disability or sickness resulting out of an accident.

(3) If the death, injury or damage caused by an accident cannot be attributed to any individual activity but is the combined or resultant effect of several such activities, operation and processes, the Tribunal may apportion the liability for compensation amongst those responsible for such activities, operations and processes on an equitable basis.

4. Applications for claim for compensation.—(1) An application for claim for compensation may be made—

(a) by the person who has sustained the injury;

(b) by the owner of the property to which the damage has been caused;

(c) where death has resulted from the accident, by all or any of the legal representatives of the deceased;

(d) by any agent duly authorised by such person of owner of such property or all or any of the legal representatives of the deceased, as the case may be;

(e) by any representative body or organisation, functioning in the field environment and recognised in this behalf by the Central Government, under all or any of the heads specified in the Schedule; or

(f) by the Central Government or a State Government or a local authority under all or any of the heads specified in the Schedule;

Provided that where all the legal representatives of the deceased have not joined in any such application for compensation, the application shall be made on behalf of or for the benefit of all the legal representatives of the deceased and the legal representatives who have not so joined shall be impleaded as respondents to the application.

(2) The tribunal may, if it thinks fit take up the cases for claims compensation suo motu.

(3) Any claimant making an application under sub-section (1) may also make an application before the Tribunal for such relief as is provided in the Public Liability Insurance Act, 1991. (6 of 1991).

Provided that no such application shall be made if the relief has been received by the claimant earlier or an application made by the claimant to the Collector under the said Act is pending and has not been withdrawn.

(4) The Tribunal shall have, and exercise, the same jurisdication, power and authority in respect of the matters specified in the Public Liability Insurance Act, 1991 (6 of 1991) as the Collector has and may exercise and, for this purpose, the provisions of that Act shall have effect subject to the modification that the references therein to the Collector shall be construed as including a reference to the Tribunal.

(5) Every application under sub-section (1) shall be made to the Tribunal and shall contain such particulars and shall be accompanied by such documents and such fee, not exceeding one thousand rupees, as may be prescribed;

Provided that no fee shall be payable by a person whose annual income is below the prescribed limit or by a representative body or organisation referred to in clause (e) of sub-section (1) or by the Central Government, a State Government or a local authority.

(6) No application for compensation shall be entertained unless it is made within five years of the occurrence of the accident.

5. Procedure and powers of Tribunal.—(1) On receipt of an application under sub-section (1) of section 4, the Tribunal may, after such inquiry as it may deem fit, reject the application summarily.

(2) Where the Tribunal does not reject the application under sub-

section (1), the Tribunal may, after giving notice of the application to the owner and after giving the parties an opportunity of being heard, hold an inquiry into the claim or each of the claims and may make an award determining the amount of compensation which appears to be just and specifying the person or persons to whom such amount of compensation shall be paid.

(3) The Tribunal shall not be bound by the procedure laid down by the Code of Civil Procedure, 1908, (5 of 1908), but shall be guided by the principles of natural justice and, subject to the other provisions of this Act and of any rules, the Tribunal shall have power to regulate its own procedure including the fixing of places and times of its injury.

(4) The Tribunal shall have, for the purpose of discharging its functions under this Act, the same powers as are vested in a civil court under the Code of Civil Procedure, 1908 (5 of 1908) while trying a suit, in respect of the following matters, namely:—

(a) summoning and enforcing the attendance of any person and examining him on oath;
(b) requiring the discovery and production of documents;
(c) receiving evidence on affidavits;
(d) subject to the provisions of section 123 and 124 of the Indian Evidence Act, 1872, (1 of 1872), requisitioning any public record or document or copy of such record or document from any office;
(e) issuing commissions for the examination of witnesses or documents;
(f) reviewing its decisions;
(g) dismissing an application or default or deciding it ex parte;
(h) setting aside any order of dismissal of any application for default or any order passed by it ex parte; and
(i) any other matter which is to be, or may be, prescribed.

6. Conditions as to making of interim orders.—Notwithstanding anything contained in any other provision of this Act or in any other law for the time being in force, no interim order (whether by way of injunction or stay or in any other manner) shall be made on, or in any proceedings relating to, an application unless—

(a) copies of such application and of all documents in support of the plea for such interim order are furnished to the party against whom such application is made or proposed to be made; and
(b) opportunity is given to such party to be heard in the matter;

Provided that the Tribunal may dispense with the requirements of clauses (a) and (b) and make an interim order as an exceptional measure if it is satisfied, for reasons to be recorded in writing, that it is necessary so to do for preventing any loss or damage being caused to the applicant which cannot be adequately compensated in money but any such interim order shall, if it is not sooner vacated, cease to have effect on the expiry of a period of fourteen days from the date on which it is made unless the said requirements have been complied with before the expiry of that period and the Tribunal has continued the operation of the interim order.

7. Reduction of amount of relief paid under any other law.—Where in respect of death of, or injury to, any person or damage to any property, the owner, liable to pay compensation under this Act, is also liable to pay any amount and relief under the Public Liability Insurance Act, 1991 (6 of 1991) or any other compensation under any other law, the amount of compensation payable under this Act shall be reduced by the amount of relief and other compensation paid under any other law.

CHAPTER III

Establishment of National Environment Tribunal and Benches Thereof

8. Establishment of National Environment Tribunal.—The Central Government shall, by notification, establish a Tribunal, to be known as the National Environment Tribunal, to exercise the jurisdiction, powers and authority conferred on it by or under this Act.

9. Composition of Tribunal and Benches thereof.—(1) The Tribunal shall consist of a Chairperson-man and such number of Vice-Chairpersons, Judicial Members and Technical Members as the Central Government may deem fit and, subject to the other provisions of this Act, the jurisdiction, powers and authority of the Tribunal may be exercised by Benches thereof.

(2) Subject to the other provisions of this Act, a Bench shall consist of one Judicial Member and one Technical Member.

(3) Notwithstanding anything contained in sub-section (1), the Chairperson—

(a) may, in addition to discharging the functions of the Judicial Member or the Technical Member of the Bench to which he is appointed, discharge the functions of the Judicial Member or, as the case may be, the Technical Member, of any other Bench;

(b) may transfer the Vice-Chairperson or other Member from one

Bench to another Bench;

(c) may authorise the Vice-Chairperson or the Judicial Member or the Technical Member appointed to one Bench to discharge also the functions of the Vice-Chairperson or, as the case may be, the Judicial Member or the Technical Member of another Bench; and

(d) may, for the purpose of securing that any case or cases which, having regard to the nature of the questions involved, requires or require, in his opinion or under the rules made by the Central Government in this behalf, to be decided by a Bench composed of more than two Members, issue such general or special orders, as he may deem fit;

Provided that every Bench constituted in pursuance of this clause shall include at least one Judicial Member and one Technical Member.

(4) Not withstanding anything contained in the foregoing provisions of this section it shall be competent for the Chairperson or any other Member authorised by the Chairperson in this behalf to function as a Bench consisting of a single Member and exercise the jurisdiction, powers and authority of the Tribunal in respect of such classes of cases or such matters pertaining to such classes of cases as the Chairperson may, by general or special order, specify:

Provided that if at any stage of the hearing of any such case of matter, it appears to the Chairperson or such Member that the case or matter, is of such a nature that it ought to be heard by a Bench consisting of two Members, the case or matter may be transferred by the Chairperson or, as the case may be, referred to him for transfer of such Bench as the Chairperson may deem fit.

(5) Subject to the other provisions of this Act, the Benches of the Tribunal shall ordinarily sit at New Delhi (which shall be known as the principal Bench) and at such other places as the Central Government may, by notification, specify.

10. Qualifications for appointment as Chairperson Vice-Chairperson or other Member.—(1) A person shall not be qualified for appointment as the Chair-person unless he—

(a) is, or has been, a Judge of the Supreme Court or a High Court; or

(b) has for at least two years, held the office of Vice-Chairperson.

(2) A person shall not be qualified for appointment as the Vice-Chairperson unless he—

(a) is, or has been, a Judge of a High Court; or

(b) has, for at least two years, held the post of a Secretary to the Government of India or any other post under the Central or a State Government carrying a scale of pay which is not less than that of a Secretary to the Government of India; or

(c) (i) has, for at least five years, held the post of an Additional Secretary to the Government of India or any other post under the Central or a State Government carrying a scale of pay which is not less than that of an Additional Secretary to the Government of India; and

(ii) has adequate knowledge, of, or experience in, legal, administrative, scientific or technical aspects of the problems relating to environment; or

(d) has for at least three years held office as a Judicial Member or a Technical Member.

(3) A person shall not be qualified for appointment as a Judicial Member unless he—

(a) is, or has been, or is qualified to be, a judge of a High Court, or

(b) has been a member of the Indian Legal Service and has held a post in grade I of that service for at least three years.

(4) A person shall not be qualified for appointment as a Technical Member unless he has adequate knowledge of, or experience in, or capacity to deal with, administrative, scientific or technical aspects of the problems relating to environment.

(5) Subject to the provisions of sub-section (6) and (7) the Chairperson, Vice-Chairperson and every other Member of the Tribunal shall be appointed by the President.

(6) No appointment of a person possessing the qualifications specified in this section as the Chairperson or the Vice-Chairperson shall be made except after consultation with the Chief Justice of India.

(7) No appointment of a person as a Judicial Member or a Technical Member shall be made except on the recommendation of a Selection Committee appointed by the Central Government consisting of the following namely:—

(a) Chairperson of the Tribunal	Chairperson of the Committee ex officio;
(b) Secretary to the Government of India in the Ministry of Environment and Forests;	Member, ex officio;
(c) Secretary to the Government of India in the Ministry of Law, Justice and Company Affairs (Department of	Member, ex officio;

Legal Affairs);
(d) Director General, Council of Scientific and Industrial Research; Member, ex officio;
(e) an Environmental to be nominated by Member the Central Government.

11. Vice-Chairperson to act as Chairperson or to discharge his functions in certain circumstances.—(1) In the event of the occurrence of any vacancy in the office of the Chairperson by reason of his death, resignation or otherwise, the Vice-Chairperson or as the case may be such one of the Vice-Chairpersons, as the Central Government may, by notification, authorise in this behalf, shall act as the Chairperson until the date on which a new Chairperson appointed in accordance with the provisions of this Act to fill such vacancy, enters upon his office.

(2) When the Chairperson is unable to discharge his functions owing to absence, illness of any other cause, the Vice-Chairperson or, as the case may be, such one of the Vice-Chairpersons, as the Central Government may, by notification, authorise in this behalf, shall discharge the functions of the Chairperson until the date on which the Chairperson resumes his duties.

12. Term of office.—The Chairperson, Vice-Chairperson and other Member shall hold office as such for a term of five years from the date on which he enters upon his office, but shall be eligible for re-appointment for another term of five years;

Provided that no Chairperson, Vice-Chairperson or other Member shall hold office as such after he has attained,—

(a) in the case of the Chairperson; the age of seventy years;
(b) in the case of the Vice-Chairperson, the age of sixty-five years, and
(c) in the case of any other Member, the age of sixty-two years.

13. Resignation and removal.—(1) The Chairperson, Vice-Chairperson or other Member may, by notice in writing under his hand addressed to the President, resign his office:

Provided that the Chairperson, Vice-Chairperson or other Member shall unless he is permitted by the President to relinquish his office sooner, continue to hold office until the expiry of three months from the date of receipt of such notice or until a person duly appointed as his successor enters upon his office or until the expiry of his term of office, whichever is the earliest.

(2) The Chairperson, Vice-Chairperson or any other Member shall not be removed from his office except by an order made by the President

on the ground of proved misbehaviour or incapacity after an inquiry made by a Judge of the Supreme Court in which such Chairperson, Vice-Chairperson or other Member had been Court in which such Chairperson, Vice-Chairperson or other Member had been informed or the charges against him and given a reasonable opportunity of being heard in respect of those charges.

(3) The Central Government may, by rules, regulate the procedure for the investigation of misbehaviour or incapacity of the Chairperson Vice Chairperson or other Member referred to in sub-section (2).

14. Salaries and allowances and other terms and conditions of service of Chair-person, Vice-Chairperson and other Members.—The salaries and allowances payable to, and the other terms and conditions of service (including pension, gratuity and other retirement benefits) of, the Chairperson, Vice-Chairperson and other Member shall be such as may be prescribed:

Provided that neither the salary and allowances nor the other terms and conditions of service of the Chairperson, Vice-Chairperson or other Member shall be varied to his disadvantage after his appointment.

15. Provision as to the holding of offices by Chairperson, etc. on ceasing to be such Chairperson, etc.—On ceasing to hold office,—

(a) the Chairperson of the Tribunal shall be ineligible for further employment either under the Government of India or under the Government of a State;

(b) the Vice-Chairperson of the Tribunal shall, subject to the other provisions of this Act, be eligible for appointment as the Chairperson of the Tribunal, but not any other employment either under the Government of India or under the Government of a State;

(c) a Member (other than the Chairperson or Vice-Chairperson) of the Tribunal shall, subject to the other provisions of this Act, be eligible for appointment as the Chairperson or Vice-Chairperson of the Tribunal or as the Chairperson, Vice-Chairperson or Member of any other Tribunal, but not for any other employment either under the Government of India or under the Government of a State;

(d) the Chairperson, Vice-Chairperson or other Member shall not appear, act or plead before the Tribunal.

Explanation.—For the purposes of this section, employment under the Government of India or under the Government of a State includes employment under any local or other authority within the territory of India or under the control of the Government of India or under any corporation or society owned or enrolled by the Government.

16. Financial and administrative powers of Chair-person.—The Chairperson shall exercise such financial and administrative powers over the Benches as may be vested in him under the rules;

> Provided that the Chairperson shall have authority to delegate such of his financial and administrative powers as he may think fit to the Vice-Chairperson or any other officer to the Tribunal subject to the condition that the Vice-Chairperson or such officer shall, while exercising such delegated powers, continue to act under the direction, control and supervision of the Chairperson.

17. Staff of the Tribunal.—(1) The Central Government shall determine the nature and categories of the officers and other employees required to assist the Tribunal in the discharge of its functions and provide the tribunal with such officers and other employees as it may think fit.

(2) The officers and other employees of the tribunal shall discharge their functions under the general superintendence of the Chairperson.

(3) The salaries and allowances and conditions of service of the officers and other employee of the tribunal shall be such as may be prescribed.

18. Distribution of business amongst the Benches.—(1) Where the Benches of the Tribunal are constituted, the Central Government may, from time to time, by notification, make provisions as to the distribution of the business of the Tribunal amongst the Benches and specify the matters which may be dealt with by each Bench.

(2) If any question arises as to whether any matter falls within the purview of the business allocated to a Bench, the decision of the Chairperson shall be final.

Explanation.—For the removal of doubts, it is hereby declared that the expression "matters" includes applications for interim relief.

CHAPTER IV

Jurisdiction and Proceedings of the Tribunal

19. Bar of Jurisdiction.—On and from the commencement of this Act, no court or other authority except the Tribunal shall have, or be entitled of exercise, any jurisdiction powers or authority to entertain any application or action for any claim for compensation which may be entertained or dealt with by the Tribunal.

20. Power of Chairperson to transfer cases from one Bench to another.—On the application of any of the parties and after notice to the parties, and after hearing such of them as he may desire to be heard, or on his own motion without such notice, the Chairperson may transfer any case pending before one Bench, for disposal, to any other Bench.

21. Decision to be taken by majority.—If the Members of a Bench differ in opinion on any point, the point shall be decided according to the opinion of the minority, if there is a majority but if the Members are equally divided, they shall state the point or points on which they differ, and make a reference to the Chairperson who shall either hear the point or points himself or refer the case for hearing on such point or points by one or more of the other Members and such point or points shall be decided according to the opinion of the majority of the Members who have heard the case including those who first heard it.

22. Deposit of amount payable for damage to environment.—(1) Where any amount of compensation is ordered to be paid under any award by the Tribunal on the ground of any damage to environment, that amount shall be remitted to the authority specified under sub-section (3) of section 7A of the Public Liability Insurance Act, 1991 (6 of 1991) for being credited to the Environmental Relief Fund established under that section.

(2) The amount of compensation credited to the Environmental Relief Fund under sub-section (1) may be utilised by such person or authority, in such manner and for such purposes of environment as may be prescribed.

23. Execution of award or order of Tribunal.—(1) An award made by the Tribunal under this Act shall be executable by the Tribunal as a decree of civil court, and for this purpose the Tribunal shall have all the powers of a civil court.

(2) Notwithstanding anything contained in sub-section (1), the Tribunal may transmit to the Collector having jurisdiction over the area in which the accident has occurred the copy of the order made by it for payment of relief as provided in the Public Liability Insurance Act, 1991 and the Collector shall execute the order in the same manner as if it were an order made by him under that Act.

(3) Where the owner against whom the award or order is made by the Tribunal fails to make the payment or deposit the amount as directed by the Tribunal within the period specified in the award or order, such amount shall be recoverable from the owner as arrears of land revenue or of public demand.

24. Appeals.—(1) Save as provided in sub-section (2) and notwithstanding anything contained in the Code of Civil Procedure, 1908 (5 of 1908) or in any other law, an appeal shall lie against any award or other order, not being an interlocutory order, of the tribunal to the Supreme Court on one or more of the grounds specified in section 100 of that Code.

(2) No appeal shall lie against an award or other order made by the Tribunal with the consent of the parties.

(3) Every appeal under this section shall be preferred within a period of ninety days from the date of the award or other order appealed against;

Provided that no appeal by the person who is required to pay any amount in terms of such award shall be entertained by the Supreme Court unless he has deposited with it the amount so awarded in the manner directed by the Supreme Court;

Provided further that the Supreme Court may entertain the appeal after the expiry of the said period of ninety days, if it is satisfied that the appellant was prevented by sufficient cause from preferring the appeal in time.

CHAPTER V

Miscellaneous

25. Penalty for failure to comply with orders of Tribunal.—Whoever fails to comply with any order made by the Tribunal, he shall be punishable with imprisonment for a term which may extend to three years, or with fine which may extend to ten lakh rupees, or with both.

26. Offences by companies.—(1) Where any offence under this Act has been committed by a company, every person who, at the time the offence was committed, was directly in charge of, and was responsible to, the company for the conduct of the business of the company, as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly;

Provided that nothing contained in this sub-section shall render any such person liable to any punishment provided in this Act, if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a company and it is

proved that the offence has been committed with the consent or convenience of or is attributable to any neglect on the part of, any director, manager secretary or other officer of the company, such director, manager, secretary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and published accordingly.

Explanation.—For the purposes of this section,—

(a) "company" means any body corporate and includes a firm or other association of individuals; and

(b) "director", in relation to a firm, means a partner in the firm.

27. Proceedings before the tribunal to be judicial proceedings.—All proceedings before the Tribunal shall be deemed to be judicial proceedings within the meaning of sections 193, 219 and 228 (45 of 1860) of the Indian Penal Code.

28. Members and staff of Tribunal to be public servants.—The Chairperson, Vice-Chairperson and other Members and the officers and other employees of the Tribunal shall be deemed to be public servants within the meaning of section 21 (45 of 1860) of the Indian Penal Code.

29. Protection of action taken in good faith.—No suit, prosecution or other legal proceeding shall lie against the Central Government or against the Chairperson, Vice-Chairperson or other Member of the Tribunal or any other person authorised by the Chairperson, Vice-Chairperson or other Member for anything which is in good faith done or intended to be done in pursuance of this Act or any rule or order made thereunder.

30. Act to have overriding effect.—Save as provided in the Public Liability Insurance Act, 1991, the provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any other law for the time being in force or in any instrument having effect by virtue of any law other than this Act.

31. Power to make rules.—(1) The Central Government may, by notification, make rules for carrying out the purposes of this Act.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:—

(a) the particulars which an application shall contain, the documents and the fee which shall be accompanied with it and the limit of annual income of a person so as to enable him to make application without paying any fee, under sub-section (5) of section 4;

(b) any such matter in respect of which the Tribunal shall have powers of a civil court, under clause (i) of sub-section (4) of section 5;

(c) the case or cases which, having regard to the nature of the questions involved, requires or require to be decided by a Bench of more than two members, under clause (d) of sub-section (3) of section 10;

(d) procedure for the investigation of misbehaviour or incapacity of the Chairperson, Vice-Chairperson or other Member of the Tribunal under sub-section (3) of section 13;

(e) the salaries and allowances payable to, and the other terms and conditions of service of, the Chairperson, Vice-Chairperson and other Members under section 14;

(f) financial and administrative powers of the Chairperson over the Benches under section 16;

(g) the salaries and allowances and conditions of service of the officers and other employees of the Tribunal under sub-section (3) of section 17;

(h) the person or the authority by whom, the manner in which and the purposes of environment for which the amount of compensation credited to the Environmental Relied Fund shall be utilised under sub-section (2) of section 22, and

(i) any other matter which is required to be, or may be, prescribed.

(3) Every rule made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

THE SCHEDULE

[See Section 3(1)]

HEADS UNDER WHICH COMPENSATION FOR DAMAGES MAY BE CLAIMED

(a) Death;

(b) Permanent, temporary, total or partial disability or other injury or sickness;

(c) Loss of wages due to total or partial disability or permanent or temporary disability;

(d) Medical expenses incurred for treatment of injuries or sickness;

(e) Damages to private property;

(f) Expenses incurred by the Government or any local authority in providing relief, aid and rehabilitation to the affected persons;

(g) Expenses incurred by Government for any administrative or legal action or to cope with any harm or damage, including compensation for environmental degradation and restoration of the quality of environment;

(h) Loss to Government of Local authority arising out of, or connected with, the activity causing any damage;

(i) Claims on account of any harm, damage or destruction to the fauna including mileh and draught animals and aquatic fauna;

(j) Claims on account of any harm, damage or destruction to flora including aquatic flora, crops, vegetables, trees and orchards;

(k) Claims including cost of restoration on account of any harm or damage to environment including pollution of soil, air, water, land and eco-systems;

(l) Loss and destruction of any property other than private property;

(m) Loss of business or employment or both;

(n) any other claim arising out of or connected with, any activity of handling of hazardous substance.

DOCUMENT — 3(B)

The National Environment Appellate Authority Act, 1997

[Act No. 22 of 1997]*

[26th March, 1997]

* Received the assent of the President on 26-3-1997 Act published in Gaz. of India: 26-3-1997 Part II-S. 1. Ext. P. 1 (No. 36). For Statement of Objects and Reasons, see Gaz. of India 4-3-1997 Pat II-S. 2. Ext. p. 7 (No. 7).

An Act to provide for the establishment of a National Environment Appellate Authority to hear appeals with respect to restriction of areas in which any industries, operations or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards under the Environment (Protection) Act, 1986 and for matters connected therewith or incidental thereto.

Be it enacted by Parliament in the Forty-eighth Year of the Republic of India as follows:—

CHAPTER I

Preliminary

1. Short title and commencement.—(1) This Act may be called the National Environment Appellate Authority Act, 1997.

(2) It shall be deemed to have come into force on the 30th day of January, 1997.

2. Definition.—In this Act, unless the context otherwise requires,—

(a) "Act means the Environment (Protection) Act, 1986;
(b) "Authority means the National Environment Appellate Authority established under sub-section (1) of section 3;
(c) "Chairperson" means the Chairperson of the Authority:
(d) "Member" means a Member of the Authority;
(e) "prescribed" means prescribed by rules made under this Act;
(f) "Vice-Chairperson" means the Vice-Chairperson of the Authority.

CHAPTER II

Establishment of Authority

3. Establishment of Authority.—(1) The Central Government shall, by notification in the Official Gazette, establish a body to be known as the National Environment Appellate Authority to exercise the powers conferred upon, and to perform the functions assigned to, it under this Act.

(2) The head office of the Authority shall be at Delhi.

4. Composition of Authority.—The Authority shall consist of a Chairperson, a Vice-Chairperson and such other Members not exceeding three, as the Central Government may deem fit.

5. Qualifications for appointment as Chairperson, Vice-Chairperson or Member.—(1) A person shall not be qualified for appointment as a Chairperson unless he has been—

(a) a Judge of the Supreme Court; or

(b) the Chief Justice of a High Court.

(2) A person shall not be qualified for appointment as a Vice-Chairperson, unless he has—

(a) for at least two years held the post of a Secretary to the Government of India or any other post under the Central or State Government carrying a scale of pay which is not less than that of a Secretary to the Government of India; and

(b) expertise or experience in administrative, legal, managerial or technical aspects of problems relating to environment.

(3) A person shall not be qualified for appointment as a Member unless he has professional knowledge or practical experience in the areas pertaining to conservation, environmental management, law or planning and development.

(4) The Chairperson, the Vice-Chairperson and the Members shall be appointed by the President.

6. Vice-Chairperson to act as Chairperson or to discharge his functions in certain circumstances.—(1) In the event of the occurrence of any vacancy in the office of the Chairperson by reason of his death, resignation or otherwise, the Vice-Chairperson shall act as the Chairperson until the date on which a new Chairperson appointed in accordance with the provisions of this Act to fill such vacancy enters upon his office.

(2) When the Chairperson is unable to discharge his functions owing to absence, illness or any other cause, the Vice-Chairperson or, as the

case may be, such one of the Member as the Central Government may, by notification, authorise in this behalf, shall discharge the functions of the Chairperson until the date on which the Chairperson resumes his duties.

7. Term of office.—The Chairperson, the Vice-Chairperson or a Member shall hold office as such for a term of three years from the date on which he enters upon his office, but shall be eligible for re-appointment for another term of three years.

Provided that no Chairperson, Vice-Chairperson or Member shall hold office as such after he has attained—

(a) in the case of the Chairperson, the age of seventy years; and

(b) in the case of the Vice-Chairperson or a Member, the age of sixty-five years.

8. Resignation and removal.—(1) The Chairperson, the Vice-Chairperson or a Member may, by notice in writing under his hand addressed to the President, resign his office:

Provided that the Chairperson, the Vice-Chairperson or a Member shall, unless he is permitted by the President to relinquish his office sooner, continue to hold office until the expiry of three months from the date of receipt of such notice or until a person duly appointed as his successor enters upon his office or until the expiry of his term of office, whichever is the earliest.

(2) The Chairperson, the Vice-Chairperson or a Member shall not be removed from his office except by an order made by the President on the ground of proved mishebaviour or incapacity after an inquiry made by a Judge of the Supreme Court in which such Chairperson, the Vice-Chairperson or a Member had been informed of the charges against him and given a reasonable opportunity of being heard in respect of those charges.

(3) The President may suspend from office the Chairperson, the Vice-Chairperson or a Member in respect of whom a reference has been made to the Supreme Court under sub-section (2) until the President has passed orders on receipt of the report of the Supreme Court on such reference.

(4) The Central Government may, by rules, regulate the procedure for the investigation of misbehaviour or incapacity of the Chairperson the Vice-Chairperson or a Member referred to in sub-section (2).

9. Salaries and allowances and other terms and conditions of service of Chairperson, Vice-Chairperson and Members.—The salaries and allowances payable to, and the other terms and conditions of service (including pension, gratuity and other retirement benefits) of the Chairperson, the Vice-Chairperson and the Members shall be such as may be prescribed by the Central Government.

10. Vacancy in Authority not to invalidate acts or proceedings.— No act or proceedings of the Authority shall be questioned or shall be invalid merely on the ground of existence of any vacancy or defect in the established of the Authority.

CHAPTER III

Jurisdiction and Powers of Authority

11. Appeals to Authority.—(1) Any person aggrieved by an order granting environmental clearance in the areas in which any industries, operations or processes or class of industries, operations and processes shall not be carried out or shall be carried out subject to certain safeguards may, within thirty days from the date of such order, prefer an appeal to the Authority in such form as may be prescribed.

Provided that the Authority may entertain any appeal after the expiry of the said period of thirty days out not after ninety days from the date aforesaid if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.

(2) For the purposes of sub-section (1), "person" means—

(a) any person who is likely to be affected by the grant of environmental clearance;

(b) any person who owns or has control over the project with respect to which an application has been submitted for environmental clearance;

(c) any association of persons (whether incorporated or not) likely to be affected by such order and functioning in the field of environment;

(d) the Central Government, where the environmental clearance is granted by the State Government and the State Government, where the environmental clearance is granted by the Central Government; or

(e) any local authority, any part of whose local limits is within the neighbourhood of the area wherein the project is proposed to be located.

(3) On receipt of an appeal preferred under sub-section (1), the Authority shall, after giving the appellant an opportunity of being heard, pass such orders, as it thinks fit.

(4) The Authority shall dispose of the appeal within ninety days

from the date of filing the appeal:

Provided that the Authority may for reasons to be recorded in writing, dispose of the appeal within a further period of thirty days.

12. Procedure and power of Authority.—(1) The Authority shall not be bound by the procedure laid down in the Code of Civil Procedure, 1908, but shall be guided by the principles of natural justice and subject to the other provisions of this Act and of any rules made by the Central Government, the Authority shall have power to regulate its own procedure including the fixing of places and times of its inquiry and deciding whether to sit in public or in private.

(2) The Authority shall have, for the purposes of discharging its functions under this Act, the same powers as are vested in a civil court under the Code of Civil Procedure, 1908, while trying a suit, in respect of the following matters, namely:—

(a) summoning and enforcing the attendance of any person and examining him on oath;
(b) requiring the discovery and production of documents;
(c) receiving evidence on affidavits;
(d) subject to the provisions of sections 123 and 124 of the Indian Evidence Act. 1872 requisitioning any public record or document or copy of such record or document from any office;
(e) issuing commissions for the examination of witnesses of documents;
(f) reviewing its decisions;
(g) dismissing a representation for default or deciding it, ex parte;
(h) setting aside any order of dismissal of any representation for default or any order passed by it ex parte; and
(i) any other matters which is required to be, or may be, prescribed by the Central Government.

13. Financial and administrative powers of Chairperson.—The Chairperson shall exercise such financial and administrative powers as may be vested in him under the rules:

Provided that the Chairperson shall have authority to delegate such of his financial and administrative powers as he may think fit to the Vice-Chairperson or any other officer subject to the condition that the Vice-Chairperson or such other officer shall, while exercising such delegated powers continue to act under the direction, control and supervision of the Chairperson.

14. Staff of Authority.—(1) The Central Government shall determine the nature and categories of the officers and other employees required to assist the Authority in the discharge of its functions and provide the Authority with such officers and other employees as it may think fit.

(2) The officers and other employees of the Authority shall discharge their functions under the general superintendence of the Chairperson.

(3) The salaries and allowances and conditions of service of the officers and other employees shall be such as may be prescribed.

CHAPTER IV

Miscellaneous

15. Bar of jurisdiction.—With effect from the date of establishment of the Authority, no civil court or other authority shall have jurisdiction to entertain any appeal in respect of any matter with which the Authority is so empowered by or under the Act.

16. Proceedings before the Authority to be judicial proceedings.—All proceedings before the Authority shall be deemed to be judicial proceedings within the meaning of sections 193, 219 and 228 of the Indian Penal Code.

17. Members and staff of Authority to be public servants.—The Chairperson, the Vice-Chairperson and the Members and the officers and other employees of the Authority shall be deemed to be public servants within the meaning of section 21 of the Indian Penal Code.

18. Protection of action taken in good faith.—No suit, prosecution or other legal proceeding shall lie against the Central Government or against the Chairperson, the Vice-Chairperson or a Member of the Authority or any other person authorised by the Chairperson, the Vice-Chairperson or a Member for anything which is in good faith done or intended to be done in pursuance of this Act or any rule or order made thereunder.

19. Penalty for failure to comply with orders of Authority.—Whoever fails to comply with any order made by the Authority, he shall be punishable with imprisonment for a term which may extend to seven years, or with fine which may extend to one lakh rupees, or with both.

20 Offences by companies.—(1) Where any offence under the Act has been committed by a company every person who at the time the offence was committed, was directly in charge of, and was responsible to the company for the conduct of the business of the company, as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this sub-section shall render any such person liable to any punishment provided in this Act, if he proves that the offence was committed without his knowledge or that he has exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any director, manager, secretary or other officer of the company, such director, manager, secretary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

Explanation.—For the purposes of this section,—

(a) "company" means any body corporate and includes a firm or other association of individuals; and

(b) "director" in relation to a firm, means a partner in the firm.

21. Power to remove difficulties.—(1) If any difficulty arises in giving effect to the provisions of this Act, the Central Government may, by order punished in the Official Gazette, make such provisions, not in consistent with the provisions of this Act, as appear to it to be necessary or expedient for removing the difficulty:

Provided that no such order shall be made after the expiry of the period of three years from the date on which this Act receives the assent of the President.

(2) Every order made under this section shall, as soon as may be after it is made be laid before each House of Parliament.

22. Power to make rules.—(1) The Central Government may, by notification, make rules for carrying out the provisions of this Act.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:—

(a) the procedure under sub-section (4) of section 8 for the investigation of misbehaviour or incapacity of the Chairperson, the Vice-Chairperson or a Member;

(b) the salaries and allowances payable to and the other terms and conditions of service of the Chairperson, the Vice-Chairperson and the Members under section 9;

(c) the form which an appeal shall contain under sub-section (1) of section 11;

(d) financial and administrative powers of the Chairperson under section 13;

(e) the salaries and allowances and conditions of service of the officers and other employees of the Authority;

(f) any other matter which is required be, or may be prescribed.

(3) Every rule made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session of the successive sessions aforesaid, both Houses agree in making any modification in the rule of both Houses agree that the rule should not be made. The rule shall thereafter have effect only in such modified form or be of no effect, as the case may be: so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

23. Repeal and saving.—(1) The National Environment Appellate Authority Ordinance, 1997 is hereby repealed.

(2) Notwithstanding such repeal, anything done or any action taken under the said Ordinance, shall be deemed to have been done or taken under the corresponding provisions of this Act.

DOCUMENT — 4

National Water Policy*

* Reproduced from *Wastelands News*, Vol. III, No. 2, (Nov. 1987 - January 1988), pp. 2-4.

Role of water management in wastelands development cannot be overemphasised. Readers are aware of the attention given by us to this important matter. Our recent issues have highlighted some aspects of this concern.

The Government of India was engaged in evolving a national water policy for sometime. As a result, a document has been published recently. We reproduce below excerpts from this document.

Water is a prime natural resource, a basic human need and a precious national asset. Planning and development of water resources need to be governed by national perspectives.

It has been estimated that out of the total precipitation of around 400 million hectare metres in the country, the surface water availability is about 178 million hectare metres. Out of this about 50 per cent be put to beneficial use because of topographical and other constraints. In addition there is a ground water potential of about 42 million hectare metres. The availability of water is highly uneven in both space and time. Precipitation is confined to only about three or four months in the year. It varies from 10 cm in the western parts of Rajasthan to over 1000 cm at Cherrapunji in Meghalaya. Further, water does not respect state boundaries. Not merely rivers but also underground aquifers often cut across state boundaries. Water as a resource is one and indivisible; rainfall, river waters, surface ponds and lakes and ground water are all part of one system. Water is also a part of a larger ecological system.

Floods and drought affect vast areas of the country. A third of the country is drought prone. Floods affect an average area of around nine million hectares per year. According to the National Commission on Floods, the area susceptible to floods is around 40 million hectares. The approach to the management of drought and floods has to be coordinated and guided at the national level.

Even the planning and implementation of individual irrigation or multi-purpose projects, though done at the State level, involve a number of aspects and issues such as environmental protection, rehabilitation of project-affected people and livestock, public health consequences of water impoundment, dam safety, etc. On these matters common approaches and guidelines are necessary. In some irrigation commands, problems of waterlogging and soil salinity have emerged, leading to the degradation of good agricultural land. There are also complex problems of equity and social justice in regard to water distribution. The development and exploitation of the country's groundwater resources also give rise to questions of judicious and scientific resource management and conservation. All these questions need to be tackled on the basis of common policies and strategies.

The growth process and the expansion of economic activities inevitably lead to increasing demands for water for diverse purposes: domestic, industrial, agricultural, hydro-power, navigation, recreation, *etc*. So far, the principal consumptive use of water has been for irrigation. While the irrigation potential is estimated to have increased from 19.5 million hectares at the time of Independence to about 68 million hectares at the end of the Sixth Plan, further development of a substantial order is necessary if the food and fibre needs of a growing population are to be met. The country's population which is over 750 million at present is expected to reach a level of around 1,000 million by the turn of the century.

NEED FOR EFFICIENT USE

The production of foodgrains has increased from around 50 million tonnes in the fifties to about 150 million tonnes at present, but this will have to be raised to around 240 million tonnes by the year 2000 A.D. The drinking water needs of people and livestock have also to be met. Adequate drinking water facilities have to be provided to the entire population in both urban and rural areas and sanitation facilities to 80 per cent of the urban population and 25 per cent of the rural population by the end of the decade. Domestic and industrial water needs have largely been concentrated in or near the principal cities, but the demand from rural society is expected to increase sharply as the development programmes improve economic conditions in the rural areas. The demand for water for hydro and thermal power generation and for other industrial uses is also likely to increase substantially. As a result water which is already a scarce resource will become even scarcer in future. This underscores the need for the utmost efficiency in water utilisation and a public awareness of the importance of its conservation.

Another important aspect is water quality. Improvements in existing strategies and the innovation of new techniques resting on a strong science and technology base will be needed to eliminate the pollution of surface and ground water resources, to improve water quality and to step up the recycling and re-use of water. Science and technology and training have also important roles to play in water resources development in general.

Water is one of the most crucial elements in development planning. As the country prepares itself to enter the 21st century, efforts to develop, conserve, utilise and manage this important resource have to be guided by national perspectives. The need for a national water policy is thus abundantly clear: water is a scarce and precious national resource to be planned, developed and conserved as such, and on an integrated and environmentally sound basis, keeping in view the needs of the States concerned.

INFORMATION SYSTEM

The prime requisite for resource planning is a well-developed information system. A standardised national information system should be established with a network of data banks and data bases, integrating and strengthening the existing Central and State level agencies and improving the quality of data and the processing capabilities.

The water resources available to the country should be brought within the category of utilisable resources to the maximum possible extent. The resources should be conserved and the availability augmented by measures for maximising retention and minimising losses.

Resource planning in the case of water has to be done for a hydrological unit such as a drainage basin as a whole, or for a sub-basin. All individual developmental projects proposals should be formulated by the States and considered within the framework of such an overall plan for a basin or sub-basin, so that the best possible combination of options can be made.

Appropriate organisations should be established for the planned development and management of a river basin as a whole. Special multidisciplinary units should be set up in each state to prepare comprehensive plans taking into account not only the needs of irrigation but also harmonising various other water uses.

Water should be made available to water-short areas by transfer from other areas including transfers from one river basin to another, based on a national perspective, after taking into account the requirements of the areas/basins.

Recycling and re-use of water should be an integral part of water resource development.

PROJECT PLANNING

Water resource development projects should as far as possible be planned and developed as multipurpose projects. Provision for drinking water should be a primary consideration. The projects should provide for irrigation, flood mitigation, hydro-electric power generation, navigation, pisciculture and recreation wherever possible.

The study of the impact of a project during construction and later on human lives, settlements, occupation, economic and other aspects should be an essential component of project planning. Project planning should pay special attention to the needs of Scheduled Castes and Scheduled Tribes and other weaker sections of society.

In the planning, implementation and operation of projects, the preservation of the quality of environment and the ecological balance should be a primary consideration. The adverse impact, if any, on the environment should be minimised and should be off-set adequate compensatory measures.

There should be an integrated and multi-disciplinary approach to the planning, formulation, clearance and implementation of projects, including catchment treatment and management, environmental and ecological aspects, the rehabilitation of affected people and command area development.

The planning of projects in hilly areas should take into account the need to provide assured drinking water, possibilities of hydro-power development and the proper approach to irrigation in such areas, in the context of physical features and constraints such as steep slopes, rapid run-off and the incidence of soil position. The economic evaluation of projects in such areas should also take these factors into account.

GROUND WATER DEVELOPMENT

There should be a periodical reassessment on a scientific basis of the ground water potential, taking into consideration the quality of the water available and economic viability.

Exploitation of ground water resources should be so regulated as not o exceed the recharging possibilities, as also to ensure social equity.

Ground water recharge projects should be developed and implemented for augmenting the available supplies.

Integrated and coordinated development of surface water and ground water and their conjunctive use, should be envisaged right from the project planning stage and should from an essential part of the project.

Over-exploitation of ground water should be avoided near the coast to prevent ingress of sea water into sweet water aquifers.

In the planning and operation of systems, water allocation priorities should be broadly as follows: Drinking water, Irrigation, Hydro-power, Navigation. Industrial and other uses.

However, these priorities, might be modified if necessary in particular regions with reference to area specific considerations.

Irrigation and multipurpose projects should invariably include a drinking water component, wherever there is no alternative source of drinking water. Drinking water needs of human beings and animals should be the first charge on any available water.

IRRIGATION

Irrigation planning either in an individual project or in a basin as a whole should take into account the irrigability of land, cost-effective irrigation options possible from all available sources of water and appropriate irrigation techniques. The irrigation intensity should be such as to extend the benefits of irrigation to as large a number of farm families as possible, keeping in view the need to maximise production.

There should be a close integration of water-use and land-use policies.

Water allocation in an irrigation system should be done with due regard to quity and social justice. Disparities in the availability of water between heard-reach and tail end farms and between large and small farms should be obviated by adoption of a rotational water distribution system and supply of water on a volumetric basis subject to certain ceilings.

Efforts should be made to involve farmers progressively in various aspects of management of irrigation systems, particularly in water distribution and collection of water rates. Assistance of voluntary agencies should be enlisted in educating the farmers in efficient water use and water management.

WATER QUALITY

Both surface water and ground water should be regularly monitored for quality. A phased programme should be undertaken for improvements in water quality.

Economic development and activities including agricultural industrial and urban development, should be planned with due regard to the constraints imposed by the configuration of water availability. There should be a water zoning of the country and the economic activities should be guided and regulated in accordance with such zoning.

The efficiency of utilisation in all the diverse uses of water should be improved and an awareness of water as a scarce resource should be fostered. Conservation consciousness should be promoted through education, regulation, incentives and disincentives.

There should be a master plan for flood control and management for each flood prone basin. Sound watershed management through extensive soil conservation, catchment-area treatment, preservation of forests and increasing the forest area and the construction of check-dams should be promoted to reduce the intensity of floods.

The erosion of land, whether by the sea in coastal areas or by river waters in land, should be minimised by suitable cost-effective measures. The States and Union territories should also undertake all requisite steps to ensure that indiscriminate occupation and exploitation of coastal strips of land are discouraged and that the location of economic activities in areas adjacent to the sea is regulated.

DROUGHT MANAGEMENT

Drought-prone areas should be made less vulnerable to drought-associated problems through soil-moisture conservation measures, water harvesting practices, the minimisation of evaporation losses, the development of the ground water potential and the transfer of surface water from surplus areas where feasible and appropriate. Pastures, forestry or other modes of development which are relatively less water-demanding should be encouraged. In planning water resource development projects, the needs of drought-prone areas should be given priority.

Relief works undertaken for providing employment to drought-stricken populations should preferably be for drought proofing.

In view of the vital importance of water for human and animal life, for maintaining ecological balance and for economic and developmental activities of all kinds, and considering its increasing scarcity, the planning and management of this resource and its optimal, economical and equitable use has become a matter of the utmost urgency. The success of the national water policy will depend entirely on the development and maintenance of a national consensus and commitments to its underlying principles and objectives.

DOCUMENT — 5

National Forest Policy*

[Text of the Resolution on National Forest Policy, 1988, presented in Parliament in December 1988]

* Reproduced from Wasteland News, February-April 1989, pp. 2-6.

PREAMBLE

In Resolution No. 13/52-F. dated the 12th May 1952, the Government of India in the erstwhile Ministry of Food and Agriculture enunciated a Forest Policy to be followed in the management of State Forests in the country. However, over the years, forests in the country have suffered serious depletion. This is attributable to relentless pressures arising from ever-increasing demand for fuelwood, fodder and timer; inadequacy of protection measures; diversion of forest lands to non-forest uses without ensuring compensatory afforestation and essential environmental safeguards; and the tendency to look upon forests as revenue earnings resource. The need to review the situation and to evolve, for the future, a new strategy of forest conservation has become imperative. Conservation includes preservation, maintenance, sustainable utilisation, restoration, and enhancement of the natural environment. It has thus become necessary to review and revise the National Forest Policy.

BASIC OBJECTIVES

The basic objectives that should govern the National Forest Policy are the following:

— Maintenance of environmental stability through preservation and, where necessary, restoration of the ecological balance that has been adversely disturbed by serious depletion of the forests of the country. Conserving the natural heritage of the country preserving the remaining natural forests with the vast variety of flora and fauna, which represent the remarkable biological diversity and genetic resources of the country.

— Checking soil erosion and denudation in the catchment areas of rivers, lakes, reservoirs in the interest of soil and water conservation, for mitigating floods and droughts and for the retardation of siltation of reservoirs.

- Checking the extension of sand-dunes in the desert areas of Rajasthan and along the coastal tracts.
- Increasing substantially the forest/tree cover in the country through massive afforestation and social forestry programmes, especially on all denuded, degraded and unproductive lands. Meeting the requirements of fuelwood, fodder, minor forest produce and small timber of the rural and tribal populations.
- Increasing the productivity of forests to meet essential national needs.
- Encouraging efficient utilisation of forest produce and maximising sub-situation of wood.
- Creating a massive people's movement with the involvement of women, for achieving these objectives and to minimise pressure on existing forests.

The principal aim of Forest Policy must be ensure environmental stability and maintenance of ecological balance including atmospheric equilibrium which are vital for sustenance of all lifeforms, human, animal and plant. The derivation of direct economic benefit must be subordinated to this principal aim.

ESSENTIAL OF FOREST MANAGEMENT

Existing forests and forest lands should be fully protected and their productivity improved. Forest and vegetal cover should be increased rapidly on hill slopes, in catchment areas of rivers, lakes and reservoirs and ocean shores and on semi-arid, arid and desert tracts.

Diversion of good and productive agriculture lands to forestry should be discouraged in view of the need for increased food production.

For the conservation of total biological diversity, the network of national parks, sanctuaries, biosphere reserves and other protected areas should be strengthened and extended adequately.

Provision of sufficient fodder, fuel and pasture, specially in areas adjoining forest, is necessary in order to prevent depletion of forests beyond the sustainable limit. Since fuelwood continues to be the predominant source of energy in rural areas, the programme of afforestation should be intensified with special emphasis on augmenting fuelwood production to meet the requirement of the rural people.

Minor forest produce provides sustenance to tribal population and to other communities residing in and around the forests. Such produce should be protected, improved and their production enhanced with due regard to generation of employment and income.

STRATEGY

Area Under Forest

The national goal should be to have a minimum of one-third of the total land area of the country under forest or tree cover. In the hills and in mountainous regions, the aim should be to maintain two-third of the area under such cover in order to prevent erosion and land degradation and to ensure the stability of the fragile ecosystem.

Afforestation, Social Forestry and Farm Forestry

A massive need-based and timebound programme of afforestation and tree planting, with particular emphasis on fuelwood and fodder development, on all degraded and denuded lands in the country, whether forst or non-forest land, is a national Imperative.

It is necessary to encourage the planting of trees alongside of roads, railway lines, rivers and streams and canals, and on other unutilised lands under State/corporate, institutional or private ownership. Green belts should be raised in urban/industrial areas as well as in arid tracts. Such a programme will help to check erosion and desertification as well as improve the micro-climate.

Village and community lands, including those on foreshores and environs of tanks, not required for other productive uses, should be taken up for the development of tree crops and fodder resources. Technical assistance and other inputs necessary for initiating such programmes should be provided by the government. The revenues generated through such programmes should be belong to the panchayats where the lands are vested in them; in all other cases, such revenues should be shared with the local communities in order to provide an incentive to them. The vesting, in individuals, particularly from the weaker sections (such as landless labour, small and marginal farmers, scheduled castes, tribals women) of certain ownership rights over trees, could be considered, subject to appropriate regulations; beneficiaries would be entitled to usufruct and would in turn be responsible for their security and maintenance.

Land laws should be so modified wherever necessary so as to facilitate and motivate individuals and institutions to undertake tree-farming and grow fodder plants, grasses and legumes on their own land. Wherever possible, degraded lands should be made available for this purpose either on lease or on the basis of a tree-patta scheme. Such leasing of the land should be subject to the land grant rules and land ceiling laws. Steps necessary to encourage them to do so must be taken. Appropriate regulations should govern the felling of trees on private holding.

Management of State Forests

Schemes and projects which interfere with forests that clothe steep slopes, cathments of rivers, lakes, and reservoirs, geologically unstable terrain and such other ecologically sensitive areas should be severely restricted. Tropical rain/moist forest, particularly in areas Arunachal Pradesh, Kerala, Andaman and Nicobar Islands, should be totally safeguarded. No forest should be permitted to be worked the government having approved the management plan, which should be in a prescribed format and in keeping with the National Forest Policy. The Central Government should issue necessary guidelines to the State Government in this regard and monitor compliance.

In order to meet the growing needs for essential goods and services which the forests provide, it is necessary to enhance forest cover and productivity of the forests through the application of scientific and technical inputs. Production forestry programmes, while aiming at enhancing the forest cover in the cover in the country, and meeting national needs, should also be oriented to narrowing, by the turn of the century, the increasing gap between demand and supply of fuel-wood. No such programme, however, should entail clear-felling of adequately stocked natural forests. Nor should exotic species be introduced, through public or private sources, unless long-term scientific trails undertaken by specialists in ecology, forestry and agriculture have established that they are suitable and have no adverse impact on native vegetation and environment.

Rights and Concessions

The rights and concessions, including grazing, should always remain related to the carrying capacity of forests. The capacity itself should be optimised by increased investment, silvicultural research and development of the area. Stall-feeding of cattle should be encouraged. The requirements of the community, which cannot be met by the rights and concessions so determined, should be met by development of social forestry outside the reserved forests.

The holders of customary rights and concessions in forest areas should be motivated to identify themselves with the protection and development of forests from which they derive benefits. The rights and concessions from forests should primarily be for the bonafide use of the communities living within and around forest areas, specially the tribals.

The life tribals and other poor living within and near forests revolves around forests. The rights and concessions enjoyed by them should be fully protected. Their domestic requirements of fuelwood, fodder, minor forest produce and construction timber should be the first charge on forest produce. These and substitute materials should be made available through conveniently located depots at reasonable prices.

Similar consideration should be given to scheduled castes and other poor living near forests. However, the area, which such consideration should cover, would be determined by the carrying capacity of the forests.

Wood is in short supply. The long-term solution for meeting the existing gap lies in increasing the productivity of forests, but to relieve the existing pressure on forests for the demands of railways sleepers, construction industry (particularly in the public sector), furniture and panelling, mine-pit props, paper and paper board, etc., substitution of wood needs to be taken recourse to. Similarly, on the front of domestic energy, fuelwood needs to be substituted as far as practicable with alternate sources like biogas, LPG and solar energy. Fuel-efficient "chullhas" as a measure of conservation of fuelwood need to be popularised in rural areas.

Diversion of Forest Lands for Non-forest Purposes

Forest land or land with tree cover should not be treated merely as resource readily available to be utilised for various projects and programmes, but as a national assets which requires to be properly safeguarded for providing sustained benefits to the entire community. Diversion of forest land for any non-forest purpose should be subject to the most careful examinations by specialists from the standpoint of social and environmental costs and benefits. Construction of dams and reservoirs, mining and industrial development and expansion of agriculture should be consistend with the needs for conservation of trees and forests. Project which involve such diversion should at least provide in their investment budget, funds for regeneration/compensatory afforestation.

Beneficiaries who are allowed mining and quarrying in forest land and in land covered by trees should be required to repair and re-vegetate the area in accordance with established forestry practices. No mining lease should be granted to any party, private or public, without a proper mine management plan appraised from the environmental angle and enforced by adequate machinery.

Wildlife Conservation

Forest Management should take special care of the needs of wildlife conservation, and forest management plans should include prescriptions for this purpose. It is specially to provide for "corridors" linking the protected areas in order to maintain genetic continuity between artificially separated sub-section of migrant wildlife.

Tribal People and Forests

Having regard to the symbiotic relationship between the tribal people and forests, a primary task of all agencies responsible for forest management, including the forest development corporations should be to associate the tribal people closely in the protection, regeneration and development of forests as well as to provide gainful employment to people living in and around the forest. While safeguarding the customary rights and interests of such people, forestry programmes should pay special attention to the following:

- One of the major causes for degradation of forest is illegal cutting and removal by contractors and their labour. In order to put an end to this practice, contractors should be replaced by institutions such as tribal cooperatives, labour cooperatives, government corporations, etc., as early as possible.
- Protection, regeneration and optimum collection of minor forest produce along with institutional arrangements for the marketing of such produce;
- Development of forest villages on par with revenue villages;
- Family-oriented schemes for improving the status of the tribal beneficiaries; and
- Undertaking integrated area development programmes to meet the needs of the tribal economy in and around the forest areas, including the provision of alternative sources of domestic energy on a subsidised basis, to reduce pressure on the existing forest areas.

Shifting Cultivation

Shifting cultivation is affecting the environment and productivity of land adversely. Alternative avenues of income, suitably harmonised with right landuse practices, should be devised to discourage shifting cultivation. Efforts should be made to contain such cultivation within the area already affected, by propagating improved agricultural practices. Area already managed by such cultivation should be rehabilitated through social forestry and energy plantations.

Damage to Forests from Encroachments, Fires and Grazing

Encroachment on forest lands has been on the increase. The trend has to be arrested and effective action taken to prevent its continuance. There should be no regularisation of existing encroachments.

The incidence of forest fires in the country is high. Standing trees and fodder are destroyed on a large scale and natural regeneration annihilated by such fires. Special precautions should be taken during the fire season. Improved and modern management practices should be adopted to deal with forest fires.

Grazing in forest areas should be regulated with the involvement of the community. Special conservation areas, young plantations and regeneration areas should be fully protected. Grazing and browsing in forest areas need to be controlled. Adequate grazing fees should be levied to discourage people in forest areas from maintaining large herds of non-essential livestock.

Forest-based Industries

The main considerations governing the establishment of forest-based industries and supply of raw material to them should be as follows:

- As far as possible, a forest-based industry should raise raw material needed for meeting its own requirements, preferably by establishment of a direct relationship between the factory and the individuals who can grow the raw material by supporting the individuals with inputs including credit, constant technical advice and finally harvesting and transport services.
- No forest-based enterprise, except that at the village or cottage level, should be permitted in the future unless it has been first cleared after a careful scrutiny with regard to assured availability of raw material. In any case, the fuel, fodder and timber requirements of the local population should not be sacrificed for this purpose.
- Forest-based industries must not only provide employment to local people on priority but also involve them fully in raising trees and raw-material.

- Natural forests serve as a gene pool resource and help to maintain ecological balance. Such forests will not, therefore, be made available to industries for undertaking plantation and for any other activities.
- Farmers, particularly small and marginal farmers would be encouraged to grow, on marginal/degraded lands available with them, wood species required for industries. These may also be grown along with fuel and fodder species on community lands not required for pasture purposes, and by forest department/corporations on degraded forests, not ear-marked for natural regeneration.
- The practice of supply of forest produce to industry at concessional prices should cease. Industry should be encouraged to use alternative raw materials. Import of wood and wood products should be liberalised.
- The above considerations will, however, be subject to the current policy relating to land ceiling and land-laws.

Forest Extension

Forest conservation programme cannot succeed without the willing support and cooperation of the people. It is essential, therefore, to inculcate in the people, a direct interest in forests, their development and conservation, and to make them conscious of the value of trees, wildlife and nature in general. This can be achieved through the involvement of educational institutions, right from the primary stage. Farmers and interested people should be provided opportunities through institutions like Krishi Vigyan Kendras, Trainers' Training Centres to learn agri-silvicultural and silvicultural techniques to ensure optimum use of their land and water resources. Short-term extension courses and lectures should be organised in order to educate farmers. For this purpose, it is essential that suitable programmes are propagated through mass media, audio-visual aids and the extension machinery.

Forestry Education

Forestry should be recognised both as a scientific discipline as well as profession. Agriculture universities and institutions dedicated to the development of forestry education should formulate curricula and courses for imparting academic education and promotings post-graduate research and professional excellence, keeping view the manpower needs of the country. Academic and professional qualifications in forestry should be kept in view for recruitment to the Indian Forest Service and the State

Forest Service. Specialised and orientation courses for developing better management skills by inservice training need to be encouraged, taking into account the latest development in forestry and related disciplines.

Forestry Research

With the increasing recognition of the importance of forests for environmental health, energy and employment, emphasis must be laid on scientific forestry research, necessitating adequate strengthening of the research base as well as new priorities for action. Some broad priority areas of research and development needing special attention are:

(*i*) Increasing the productivity of wood and other forest produce per unit of area per unit time by the application of modern scientific and technological methods.

(*ii*) Revegetation of barren/marginal/waste/mined lands and watershed areas.

(*iii*) Effective conservation and management of existing forest resources (mainly natural forest ecosystems).

(*iv*) Research related to social forestry for rural/tribal development.

(*v*) Development of substitutes to replace wood and wood products.

(*vi*) Research related to wildlife and management of national parks and sactuaries.

Personnel Management

Government policies in personnel management for professional foresters and forest scientists should aim at enhancing their professional competence and status and attracting and retaining qualified and motivated personnel, keeping in view particularly the arduous nature of duties they have to perform, often in remote and inhospitable places.

Forest Survey and Data Base

Inadequacy of data regarding forest resources is a matter of concern because this creates a false sense of complacency. Priority needs to be accorded to completing the survey of forest resources in the country on scientific lines and to updating information. For this purpose, periodical collection, collation and publication of reliable data on relevant aspects of forest management needs to be improved with resource to modern technology and equipment.

Legal Support and Infrastructure Development

Appropriate legislation should be undertaken, supported by adequate infrastructure, at the Centre and State levels in order to implement the Policy effectively.

Financial Support for Forestry

The objectives of this revised Policy cannot be achieved without the investment of financial and other resources on a substancial scale. Such investment is indeed fully justified considering the contribution of forests in maintaining essential ecological process and life-support systems and in preserving genetic diversity. Forests should not be looked upon as a source of revenue. Forests are a renewable natural resource. They are a national asset to be protected and enhanced for the well-being of the people and the Nation.

DOCUMENT — 6

Declaration of the United Nations Conference on the Human Environment, 1972*

On June 16, 1972, the United Nations Conference on the Human Environment adopted a Declaration on the human environment consisting of a preamble and 26 principles.

By the preamble, the Conference proclaimed that the defence and improvement of the human environment-both natural and man-made — had become an imperative goal for mankind, to be pursued together with the fundamental goals of peace and of world-wide economic and social development. The achievement of this goal was the responsibility of citizens, communities, enterprises and institutions at every level. Although local and national governments would bear the greatest burden for large-scale environmental policy and action within their jurisdictions, international cooperation was also needed, both to raise resources to support the developing countries in carrying out their responsibilities in this field, and because a growing class of environmental problems were regional or global in extent.

By the preamble, the conference also, among other things, affirmed that in the developing countries most environmental problems were caused by under-development, whereas in the industrialized countries they were generally related to industrialization and technological development. The Conference also declared that the natural growth of population continuously presented problems on the preservation of the environment and required the adoption, as appropriate, of adequate policies and measures.

The Conference then laid down the following 26 principles:

1. Man had the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permitted a life of dignity and well-being, and he bore a solemn responsibility to protect and improve the environment for present and future generations. In this respect, policies promoting or perpetuating *apartheid*, racial segregation, discrimination, colonial and other forms of oppression and foreign domination stood condemned

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* Extracts from Yearbook of the United Nations, 1972, Vol. 26, p. 319-21 and 330-31.

and had to be eliminated.

2. The natural resources of the earth, including the air, water, land, flora and fauna and, especially, representative samples of natural ecosystems, were to be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate.
3. The capacity of the earth to produce vital renewable resources was to be maintained and, wherever practicable, restored or improved.
4. Man had a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat which were now gravely imperilled by a combination of adverse factors. Nature conservation, including wildlife, was therefore to receive importance in planning for economic development.
5. The non-renewable resources of the earth were to be employed in such a way as to guard against the danger of their future exhaustion and to ensure that benefits from such employment were shared by all mankind.
6. The discharge of toxic substances or of other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, had to be halted in order to ensure that serious or irreversible damage was not inflicted upon ecosystems. The just struggle of the peoples of all countries against pollution should be supported.
7. States were to take all possible steps to prevent pollution of the seas by substances that were liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.
8. Economic and social development was essential for ensuring a favourable living and working environment for man and for creating conditions on earth that were necessary for the improvement of the quality of life.
9. Environmental deficiencies generated by the conditions of underdevelopment and natural disasters posed grave problems and could best be remedied by accelerated development through the transfer of substantial quantities of financial and technological assistance as a supplement to the domestic effort of the developing countries and such timely assistance as might be required.
10. For the developing countries, stability of prices and adequate earnings for primary commodities and raw material were essential to environmental management, since economic factors as well as

ecological processes had to be taken into account.

11. The environmental policies of all States should enhance and not adversely affect the present or future development potential of developing countries, nor should they hamper the attainment of better living conditions for all, and appropriate steps should be taken by States and international organizations with a view to reaching agreement on meeting the possible national and international economic consequences resulting from the application of environmental measures.
12. Resources should be made available to preserve and improve the environment, taking into account the circumstances and particular requirements of developing countries and any costs which might emanate from their incorporating environmental safeguards into their development planning and the need for making available to them, upon their request, additional international technical and financial assistance for this purpose.
13. In order to achieve a more rational management of resources and thus to improve the environment, states should adopt an integrated and coordinated approach to their development planning so as to ensure that development was compatible with the need to protect and improve the human environment for the benefit of their population.
14. Rational planning constituted an essential tool for reconciling any conflict between the needs of development and the need to protect and improve the environment.
15. Planning was to be applied to human settlements and urbanization with a view to avoiding adverse effects on the environment and obtaining maximum social, economic and environmental benefits for all. In this respect, projects which were designed for colonialist and racist domination had to be abandoned.
16. Demographic policies which were without prejudice to basic human rights and which were deemed appropriate by Governments concerned should be applied in those regions where the rate of population growth or excessive population concentrations were likely to have adverse effects on the environment of development, or where low population density might prevent improvement of the human environment and impede development.
17. Appropriate national institutions were to be entrusted with the task to planning, managing or controlling the environmental resources of States, with the view to enhancing environmental qual-

ity.

18. Science and technology, as part of their contribution to economic and social development, were to be applied to the identification, avoidance and control of environmental risks and the solution of environmental problems and for the common good of mankind.
19. Education in environmental matters, for the younger generation as well as adults, giving due consideration to the underprivileged, was essential in order to broaden the basis for an enlightened opinion and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimension. It was also essential that mass media of communications avoid contributing to the deterioration of the environment, but, on the contrary, disseminate information of an educational nature, on the need to protect and improve the environment in order to enable man to develop in every respect.
20. Scientific research and development in the context of environmental problems, both national and multinational, were to be promoted in all countries, especially the developing countries. In this connection, the free flow of up-to-date scientific information and transfer of experience was to be supported and assisted to facilitate the solution of environmental problems; environmental technologies should be made available to developing countries on terms which would encourage their wide dissemination without constituting an economic burden on the developing countries.
21. State had, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control did not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.
22. States were to co-operate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction.
23. Without prejudice to such criteria as might be agreed upon by the international community, or to standards which would have to be determined nationally, it was essential in all cases to consider the systems of values prevailing in each country, and the extent of the applicability of standards which were valid for the most advance

countries but which might be inappropriate and of unwarranted social cost for the developing countries.

24. International matters concerning the protection and improvement of the environment should be handled in a co-operative spirit by all countries, big or small, on an equal footing. Co-operation through multilateral or bilateral arrangements or other appropriate means was essential to effectively control, prevent, reduce and eliminate adverse environmental effects resulting from activities conducted in all spheres, in such a way that due account was taken of the sovereignty and interests of all States.
25. States were to ensure that international organizations played a co-ordinated, efficient and dynamic role for the protection and improvement of the environment.
26. Man and his environment had to be spared the effects of nuclear weapons and all other means of mass destruction. States were to strive to reach prompt agreement, in the relevant international organs, on the elimination and complete destruction of such weapons.

Resolution 2994 (XXVII), as recommended by Second Committee, A/8901, adopted by Assembly on December 15, 1972, meeting 2112, by 112 votes to 0, with 10 absentions

THE GENERAL ASSEMBLY

Reaffirming the responsibility of the international community to take action to preserve and enhance the environment and, in particular, the need for continuous international co-operation to this end.

Recalling its resolutions 2398 (XXIII) of December 3, 1968, 2581 (XXIV) of 15 December 1969, 2657 (XXV) of December 7, 1970, 2849 (XXVI) and 2850 (XXVI) of 20 December 1971.

Having considered the report of the United Nations Conference on the Human Environment, held as Stockholm from 5 to 16 June 1972, and the report of the Secretary-general thereon.

Expressing its satisfaction that the Conference and the Preparatory Committee for the United Nations Conference on the Human Environment succeeded in focusing the attention of Governments and public opinion on the need for prompt action in the field of the environment:

1. Takes note with satisfaction of the report of the United Nations

Conference on the Human Environment;

2. Draws the attention of Governments and the Governing Council of the United Nations Environment programme to the Declaration of the United Nations Conference on the Human Environment and refers the Action plan for the Human Environment to the Governing Council for appropriate action;
3. Draws the attention of Governments to the recommendations for action at the national level referred to them by the conference for their consideration and such action as they might deem appropriate;
4. Designates 5 June as World Environment Day and urges Governments and the organizations in the United Nations system to undertake on that day every year world-wide activities reaffirming their concern for the preservation and enhancement of the environment, with a view to depending environmental awareness and to pursuing the determination expressed at the Conference;
5. Takes note with appreciation of resolution 4(1) of 15 June 1972 adopted by the Conference on the convening of a second United Nations Conference on the Human Environment and refers this matter to the Governing Council of the United Nations Environment Programme with the request that the Council study this matter, taking into account the status of implementation of the Action Plan and future developments in the field of the environment, and report its views and recommendations to the General Assembly so that the Assembly can take a decision on all aspects of the matter not later than at its twenty-ninth session.

Resolution 2995 (XXVII), as recommended by Second Committee, A/8901, adopted by Assembly on December 15, 1972, meeting 2112 by 115 votes to 0, with 10 abstentions.

THE GENERAL ASSEMBLY

Having considered principle 20 as contained in the draft text of a preamble and principles of the declaration on the human environment, referred to it for consideration by the United Nations Conference on the Human Environment.

Recalling its resolution 2849 (XXVI) of 20 December 1971 entitled "Development and environment".

Bearing in mind that, in exercising their sovereignty over their natural resources, States must seek, through effective bilateral and multilateral co-operation or through regional machinery, to preserve and improve the environment.

1. Emphasises that, in the exploration, exploitation and development of their natural resources, States must not produce significant harmful effects in zones situated outside their national jurisdiction;
2. Recognises that co-operation between States in the field of the environment, including co-operation towards the implementation of principles 21 and 22 of the Declaration of the United Nations Conference on the Human Environment, will be effectively achieved if official and public knowledge is provided of the technical data relating to the work to be carried out by States within their national jurisdiction, with a view to avoiding significant harm that may occur in the environment of the adjacent area;
3. Further recognises that the technical data referred to in paragraph 2 above will be given and received in the best spirit of co-operation and good-neighbourliness without this being construed as enabling each State to delay or impede the programmes and projects of exploration, exploitation and development of the natural resources of the States in whose territories such programmes and projects are carried out.

DOCUMENT — 7

World Conservation Strategy Executive Summary*

The World Conservation Strategy is intended to stimulate a more focused approach to the management of living resources and to provide policy guidance on how this can be carried out by three main groups:

- government policy makers and their advisers;
- conservationists and others directly concerned with living resources; and
- development practitioners, including development agencies, industry and commerce and trade unions.

1. The aim of the World Conservation Strategy is to achieve the three main objectives of living resource conservation:

(a) to maintain essential ecological processes and life-support systems (such as soil regeneration and protection, the recyling of nutrients, and the cleansing of waters) on which human survival and development depend;

(b) to preserve genetic diversity (the range of genetic material found in the world's organisms), on which depend the functioning of many of the above processes and life-support systems, the breeding programmes necessary for the protection and improvement of cultivated plants, domesticated animals and micro-organisms, as well as much scientific and medical advance, technical innovation, and the security of the many industries that use living resources; and

(c) to ensure the sustainable utilisation of species and ecosystems (notably fish and other wildlife, forests and grazing lands), which support millions of rural communities as well as major industries.

2. These objectives must be achieved as a matter of urgency because:

(a) the planet's capacity to support people is being irreversibly reduced in both developing and developed countries:
thousands of millions of tonnes of soil are lost every year as a result of deforestation and poor land management;
at least 3,000 km^2 of prime farmland disappear every year under buildings and roads in developed countries alone;

(b) hundreds of millions of rural people in developing countries, including 500 million malnourished and 800 million destitute, are compelled to destroy the resources necessary to free them from starvation and poverty:

in widening swaths around their villages the rural poor strip the land of trees and shrubs for fuel so that now many communities do not have enough wood to cook food or keep warm;

the rural poor are also obliged to burn every year 400 million tonnes of dung and crop residues badly needed to regenerate soils;

(c) the energy, financial and other costs of providing goods and services are growing: throughout the world, but especially in developing countries, siltation cuts the lifetimes of reservoirs supplying water and hydroelectricity, often by as much as half; floods devastate settlements and crops (in India the annual cost of floods ranges from $ 140 million to $ 750 million);

(d) the resource base of major industries is shrinking:

tropical forests are contracting so rapidly that by the end of this century the remaining area of unlogged productive forest will have been halved;

the coastal support systems of many fisheries and being destroyed or polluted (in the USA the annual cost of the resulting losses is estimated at $ 86 million).

3. The main obstacles to achieving conservations are:

(a) the belief that living resource conservation is a limited sector, rather than a process that cuts across and must be considered by all sectors;

(b) the consequent failure to integrate conservation with development;

(c) a development process that is often inflexible and needlessly destructive, due to inadequacies in environmental planning, a lack of rational use allocation and undue emphasis on narrow short-term interests rather than broader long-term ones;

(d) the lack of a capacity to conserve, due to inadequate legislation and lack of enforcement; poor organisation (notably government agencies with insufficient mandates and a lack of coordination); lack of trained personnel; and a lack of basic information on priorities, on the productive and regenerative capacities of living resources, and on the trade-offs between one management option and another;

(e) the lack of support for conservation, due to a lack of awareness (other than at the most superficial level) of the benefits of conservation and of the responsibility to conserve among those who use or have an impact on living resources, including in many cases governments; and

(f) the failure to deliver conservation-based development where it is most needed, notably the rural areas of developing countries.

4. The World Conservation Strategy therefore:

(a) defines living resource conservation and explains its objectives, its contribution to human survival and development and the main impediments to its achievement;

(b) determines the priority requirements for achieving each of the objectives;

(c) proposes national and subnational strategies to meet the priority requirements, describing a framework and principles for those strategies;

(d) recommends anticipatory environmental policies, a cross-sectoral conservation policy and a broader system of national accounting in order to integrate conservation with development at the policy making level;

(e) proposes and integrated method of evaluating land and water resources, supplemented by environmental assessments, as a means of improving environmental planning; and outlines a procedure for the rational allocation of land and water uses;

(f) recommends reviews of legislation concerning living resources; suggests general principles for organisation within government; and in particular proposes ways of improving the organisational capacities for soil conservation and for the conservation of marine living resources;

(g) suggests ways of increasing the number of trained personnel; and proposes more management-oriented research and research-oriented management, so that the most urgently needed basic information in generated more quickly;

(h) recommends greater public participation in planning and decision-making concerning living resource use; and proposes environmental education programmes and campaigns to build support for conservation;

(i) suggests ways of helping rural communities to conserve their living resources, as the essential basis of the development they need.

5. In addition, the strategy recommends international action to promote, support and (where necessary) coordinate national action, emphasising in particular the need for:

(a) stronger more comprehensive international conservation law, and increased development assistance for living resource conservation;

(b) inernational programmes to promote the action necessary to conserve tropical forests and drylands to protect areas essential for the preservation of genetic resources, and to conserve the global (commons) the open ocean, the atmosphere, and Antarctica;

(c) regional strategies to advance the conservation of shared living resources particularly with respect to international river basins and seas.

6. The world Conservation Strategy ends by summarising the main requirements for sustainable development, indicating conservation priorities for the Third Development Decade.

CHECKLIST OF PRIORITY, REQUIREMENTS, NATIONAL ACTIONS AND INTERNATIONAL ACTIONS

1. Priority requirements,

(a) reservation of prime quality crop-land crops,

(b) adoption of management practices to maintain the productivity of cropland, grazing land and forests,

(c) prevention of solid degradation and restoration of land where soils are already degraded,

(d) protection of watersheds, especially upper catchment areas,

(e) maintenance of the support systems of fisheries,

(f) control of pollution,

(g) prevention of species extinctions,

(h) preservation of as many varieties as possible of domesticated and other economic or useful plants, animals and micro-organisms and their wild relatives,

(i) establishment of a comprehensive network of protected areas, securing the habitats of threatened, unique and other important species, unique ecosystems, and representative samples of ecosystem types,

(j) regulation of living resource utilisation so that it is sustainable,

(k) reduction of incidental take,

(l) maintenance of the habitats of utilised species,

(m) careful allocation and management of timber concessions.

2. Priority national actions,

(a) preparation and implementation of national and/or subnational conservation strategies,

(b) adoption of anticipatory environmental policies,
(c) adoption of a cross-sectoral conservation policy,
(d) inclusion of non-monetary indicators of conservation performance in national accounting systems,
(e) preparation of ecosystem evaluations,
(f) advance assessment of the likely environmental effects of all major actions,
(g) adoption of a procedure for allocating land and water uses based on ecosystem evaluation and environmental assessment,
(h) review and strengthening of legislation concerning living resources to ensure that it provides, sufficiently for conservation, paying particular attention to enforcement,
(i) review and improvement of the status, organisation, funding and staffing of agencies with responsibilities for living resources,
(j) establishment of a soil and water conservation body at the policy making level,
(k) establishment of new organisations or of special measures to coordinate existing ones for the comprehensive management of marine living resources,
(l) review and strengthening of training facilities at the professional, technician and user levels,
(m) increased research to improve the management of living resources,
(n) greater public participation in decisions concerning living resources,
(o) environmental education campaigns and programmes, particularly for the users of living resources, legislators and decision-makers, school-children and students,
(p) rural development combining short-term measures to ensure human survival with long-term measures to safeguard the resource base and improve the quality of life.

3. Priority international actions.

(a) review of the coverage and effectiveness of international law relevant to living resources, and development of new law to remedy any deficiencies,
(b) implementation of international conservation conventions,
(c) multilateral and bilateral assistance for reforestation, the restoration of degraded environments, and the protection of the support systems of fisheries and of genetic resources,
(d) multilateral and bilateral assistance for the design and implementation of ecologically appropriate policies and the establishment

and maintenance of effective conservation procedures, laws and organisations,

(e) cooperative programmes for conservation of tropical forests,
(f) cooperative programmes for conservation of drylands,
(g) a cooperative programme for the on site protection of the wild relatives of economic or useful species, of threatened species, and of ecosystems of exceptional diversity,
(h) conservation of the species and ecosystems of the open ocean,
(i) implementation of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter of the Convention on the Regulation of Long-range Transboundary Air Pollution, and of analogous regional conventions,
(j) control of deep sea mining,
(k) support for the World Climate Programme,
(l) conservation of the living resources of Antarctica and the Southern Ocean,
(m) regional strategies for the conservation of the living resources of international river basins,
(n) regional strategies for the conservation of the living resources of international seas.

DOCUMENT — 8

Action on Ozone*

* Reproduced from document entitled *Action on Ozone*, brought out by the United Nations Environment Programme, 1989.

THE SHIELD

High in the sky higher than any more than a handful of people have ventured, lies a lifegiving layer of poison. If is, as far as know, unique to our planet. If it had not developed. Earth would have remained a small, unremarkable sphere, tucked away in a far corner of one among billions of galaxies — peopled by no more, at best, than he most primitive underwater lifeforms. If it were to disappear, the sun's ultraviolet light would sterilise the surface of the globe, annihilating all terrestrial life.

The layer is made of ozone, a form of oxygen with three atoms instead of the normal two. The added atom turns the gas we breathe into a poison; any animal that inhaled more than a trace of it would die. Near the earth's surface, ozone is an increasingly troublesome pollutant, a constituent of photochemical smog and of the cocktail of pollutants popularly known as acid rain. But safely up in the stratosphere, 15 to 50 km above the earth's surface, the blue, pungent-smelling gas is as important to life as oxygen itself.

The Benefits of the Fragile Shield

Ozone forms a fragile shield, curiously insubstantial but remarkably effective. It is scattered so thinly through 35 km deep stratosphere that if it were all collected together it would form a girdle around the earth no thicker than the sole of a shoe. Concentrations of stratospheric ozone vary with height; but it never makes up as much as one hundred thousandth of the atmosphere around it.

Yet this thinnest of filters efficiently screens out almost all the harmful ultraviolet rays of the sun. The shorter the wavelength of ultraviolet radiation, the greater the harm it can do to life — and the better it is absorbed by the ozone layer. Relatively short-wave ultraviolet radiation, known as UV-C, is lethal to living things — and is almost totally screened out. Longer wavelength ultraviolet, UV-A, is relatively harmless, and is almost entirely allowed through. In the middle lies UV-B, less lethal than shorter wave radiation but still dangerous; the ozone layer absorbs most if it.

Health Risks

The small amount of UV-B radiation that does manage to penetrate the shield causes considerable harm, providing a stern warning of the consequences of impairing the ozone layer. It damages the genetic material DNA and is the main cause of skin cancer, which is already increasing rapidly around the world, there are an estimated 3,00,000 cases each year in the United States along. It is the dominant cause of non-melanoma skin cancers, the commonest and less dangerous varieties. And new evidence is increasingly implicating it as a cause of the rarer but virulent cutaneous malignant melanomas, which are rapidly increasing — doubling in frequency in just two decades. Estimates suggest that cutaneous malignant melanomas now kill about 6,000 people a year in the United States alone; the non-melanoma cancers, through 20 to 30 times more common, account for about the same number of deaths.

The ultraviolet does not just cause cancer: it also impairs the body's ability to fight it off. It suppresses the efficiency of the immune system, making it easier for tumours to take hold and spread. And the same process also makes people more vulnerable to infectious diseases that enter the body through the skin, such as herpes and the parasitical disease leishmainasis.

It also produces cataracts. Worldwide, this clouding of the eye blinds 12 to 15 million people and seriously impairs the vision of another 18 to 30 million. Ultraviolet radiation is among the causes and may also help to cause or exacerbate other eye disorders.

Threat to Nature

Even slight damage to the ozone layer will inevitably increase these diseases and disabilities, perhaps dramatically. Other forms of life will also suffer. Two-thirds of some 300 crops and other plant species tested for their tolerance to ultraviolet light have been found to be sensitive to it. Among the most vulnerable were crops related to peas and beans, melons, mustard and cabbage; increasing UV-B radiation has also been found to reduce the quality of certain types of tomato, potato, sugar beet and soya bean. Forests appear to the vulnerable too; about a half of the species of conifer seedlings that have so far been studied have been adversely affected by UV-B. It seems clear that even present levels of the radiation are limiting the growth of some plants, and that it will cut the productivity of agricultural and forestry if it increases.

Similarly, UV-B radiation strikes beneath the surface of sea, causing damage up to 20 meters down in clear waters. It is particularly harmful to small creatures such as plankton, the larvae of fish, shrimp and crab, and plants, essential to the food web of the sea. Even small increases could bring about important changes in under-water life damaging fisheries. Many countries rely on fish to provide more than half of the protein in their people's diet; many developing countries are even more dependent on food from the sea.

Polymers used in buildings, paints, packaging and countless other substances are degraded and turned brittle by UV-B; increased radiation could cause damage running into billions of dollars each year. And, ironically, a depletion of the ozone in the stratosphere could cause levels of he poisonous gas to rise just where it is not wanted. Studies suggest that increased ultraviolet radiation would cause more ozone to be formed near the earth's surface, particularly near the centres of cities, where populations are most concentrated. This would have its own effects on human health, and spread to damage crops, ecosystems and materials.

The earth and its inhabitants have an enormous stake in preserving the fragile shield of poison, so far overhead. But we have, unwittingly, been subjecting it to stealthy and sustained attack.

THE THREAT

Miracle Substances

For half a century the chemicals that are doing most to damage the ozone layer were regarded as miracle substances, uniquely useful to both industry and consumers and harmless to human beings and the environment alike. Inert and immensely stable, neither flammable nor poisonous, easy to store and cheap to produce, these chlorofluorocarbons (CFCs) seemed designed for the modern world. They do no damage whatsoever to land, sea or the air we breathe, they neither react with other substances in the biosphere nor dissolve to pollute the rain. Not surprisingly, they became more and more widespread. Invented more or less by accident in 1928, they were first developed as the working fluid for refrigerators. Since 1950, they have been used as propellants in aerosol cans, providing the power behind a wide range of sprays. The computer revolution proved their usefulness as solvents, because they clean delicate circuitry without damaging its plastic mountings, and the fast food revolution enlisted them to blow up the foam for polystyrene cups and hamburger cartons. About 30 per cent of world CFC production is used in fridges, freezers and air conditioners. about 25 per cent in spray cans, another 25 per cent in blowing foams for various uses from buildings and cars to fast food containers, and the remaining 20 per cent for cleaning and other purposes.

Their very stability, so useful on earth, enables them to attack the ozone layer. Unchanged, they slowly drift up to the stratosphere, where intense UV-C radiation severs their chemical bonds, releasing chlorine which strips an atom from the ozone molecule, turning it into ordinary oxygen. The chorine acts as a catalyst, accomplishing this destruction without itself undergoing any permanent change, so it can go on to repeat the process. In this way, every CFC molecule destroys thousands of molecules of ozone.

Some halons, related substances primarily used as fire extinguishers, are even more damaging, destroying ozone up to ten times as effectively as the most destructive CFCs. Concentrations of halons — through very small — are doubling in the atmosphere about every five years. The most damaging CFCs are also increasing rapidly; concentrations of CFC 11 and CFC 12 (much the most widespread) double every 17 years, and concentrations of CFC 113 every six years.

The Life of Damaging Chemicals

The most dangerous of the chemicals are long-lived. CFC 11 lasts for an average 74 years in the atmosphere, CFC 12 for an average 111 years, CFC 113 for an average 90 years, and Halon 1301 for an average 110 years. This gives them enough time to drift up into the stratosphere and stay there to deplete ozone. Those CFCs which have shorter lives cause much less damage.

Various other substances pose some threat to the ozone layer, but none compare with the CFCs and halons. Nitrous oxides, released by nitrogenous fertilisers and by burning coal and oil, are long-lived and can destroy ozone-but only a tiny proportion reaches the stratosphere. Methyl chloroform is also destructive, and its use is doubling every decade — but it is relatively short-lived. Supersonic aircraft and the space shuttle release nitrogen oxides and chlorine respectively into the stratosphere; but there are so few flights that these have little impact.

The Antarctic Hole

CFCs have now been shown to be the primary cause of the most dramatic evidence yet found of ozone depletion. Every southern spring a 'hole' opens in the ozone layer over Antarctic, as big as the United States and as deep as Mount Everest. The hole has grown most years since 1979. In October 1987, when it was at its biggest, the total amount of ozone over a measuring station at Halley Bay was less than a half of its 1970s levels: between 15 and 20 km up over Antarctica, where the depletion was greatest, 95 per cent of the ozone had disappeared.

No body knows what the consequences of the hole will be, but intensive scientific research has established beyond doubt that CFCs are responsible for it. They seem to be assisted by the unique meteorology of the area, which creates an extremely cold isolated mass of air around the south pole, providing ideal conditions for the chemicals to do their work.

Research also shows that since 1979 ozone has declined by some five per cent over Antarctica throughout the year (as opposed to merely in springtime, when the hole appears). Indeed, there is increasing evidence that the ozone layer is thinning all over the world. The global data is much less conclusive than the findings from the southern continent, but it seems that since 1970 (after allowing for natural variations) the protective ozone layer has already shrun by about four per cent in winter and one per cent in summer over the northern hemisphere from 64 to 30 degrees north. This is about twice the depletion that computer models had predicted.

It is estimated that if emissions of CFCs and halons continue to grow as in the past, the ozone layer will be depleted by about 20 per cent within the lifetimes of today's children. Just half this loss in the protective shield, it has been estimated, would cause one and a half million extra deaths from skin cancer and five million extra cataracts in the United States alone.

The Greenhouse Effect

Yet the CFCs and halons are likely to do even greater damage than this, through there contribution to the Greenhouse Effect. Every molecule of CFCs 11 and 12 is more than 10,000 times ad effective at warming up the earth than a molecule of carbon dioxide. They are responsible for about 20 per cent of the warming of the climate, and their contribution is rising.

In addition, the destruction of ozone may itself perturb the earth's climate. The layer is affected differently at different heights. Generally speaking it is likely to get thinner about 25 km, with particularly large damage at about 40 km up. But levels of ozone may actually grow between about 20 km and ground level. The strata of the ozone layer will be grossly distorted, and this is likely to have great, but unknown, effects on the composition of the world's climate.

The discovery of the antarctic hole and the declining levels of ozone worldwide alerted scientists and governments to a global emergency. Fortunately, UNEP had been steadily building up a framework which has enabled it to coordinate international action.

UNEP ACTS

UNEP has been concerned with the protection of the ozone layer since its birth. Indeed, the issue was covered in the preparations for the Stockholm Conference on the Human Environment in 1972 — which led to the establishment of UNEP; the conference's 'pollutants' paper called for research on how human activities affected the "stratospheric transport and distribution of ozone". In June 1973, he Executive Director's address to the first session of UNEP's Governing Council cited damage to the ozone layer as a possible "outer limit" which humanity would be wise to respect; pollution that breached the limit, it added, "may endanger the continuance of human life on this planet".

In those days, the threat from CFCs was not even suspected. Concern focused instead on the damage that might be done to the ozone layer by the hundreds of supersonic aircraft then expected to be in operation by the late 1980s, the frequent space shuttle flights foreseen at the time, and the release of nitrous oxide from fertilisers. By the mid 1970s all proved largely to be false alarms.

Pressure for Control of CFCs

But in the autumn of 1973 two scientists at the University of California at Berkeley began investigating the role of CFCs. Professor Sherwood Rowland and his young assistant Mario Molina, realising that all the long-lived CFCs ever released still remained in the atmosphere, decided to discover what happened to them. They soon worked out that the gases would drift unchanged up to the stratosphere and have a catastrophic effect on ozone — so great, indeed, that at first they did not believe their own calculations. The processes by which CFCs destroy ozone are now known to be much more complicated than the Californian scientists then envisaged (they suggested that two chemical reactions were involved, whereas some 200 have now been identified), but their basic thesis has been validated.

At the time, however, theirs was a controversial hypothesis, and for years it was debated by scientists, and challenged by industry. However, it grasped the public imagination and over the next three years, as the debate continued, pressue of control of CFCs steadily built up in the United States and other countries.

The Foundation for Action

UNEP, meanwhile, was laying the foundations for international action. In April 1975, the third meeting of its Government Council backed a programme proposed by the Executive director on risks to the ozone layer. In January 1976, UNEP produced a paper outlining its strategy for addressing the issue. This included a review of existing scientific research and the identification of gaps in knowledge, a coherent programme of monitoring ozone, and the determination of long-range trends in exposure to ultraviolet radiation. UNEP's programme also called for "an examination of the need and justification for recommending any national and international controls over the release of man-made chemicals".

That April, the Governing Council decided to convene an international conference "to review all aspects of the ozone layer", and accordingly expects from 32 countries meet the next March in Washington DC. They adopted the first international agreement on the issue, the "World Plan of action of the Ozone Layer", a detailed 21-point research plan covering the monitoring of ozone and solar radiation, the assessment of the effect of ozone depletion on human health, ecosystems and the climate, and the development of ways of assessing the costs and benefits of control measures. UN agencies and international non-governmental organisations (NGOs) took responsibility for specific parts of the programme, and UNEP was given "a broad coordinating and catalytic role". UNEP was asked to set up a Coordinating Committee on the Ozone Layer consisting of representatives of the agencies and NGOs, and of countries with major scientific programmes involved in the Action Plan. This met regularly and became the core of the international programme. Industry and NGO representatives remained fully involved in the subsequent negotiations.

By adopting the Action Plan, the conference delegates accepted that there was a potential problem, through its extent had yet to be determined, and took action to get to grips with it. In the same spirit some countries soon took action to control CFCs.

Ban on the Use of CFCs

In May 1977, the United States announced that it was phasing out the use of CFCs in aerosol cans apart from essential medical and other uses. Canada, Norway and Sweden later brought in similar bans. And in 1980 the EEC agreed not to increase its capacity to produce CFCs 11 and 12 and called for a 30 per cent cut in their use in spray cans by 1982.

These initiatives, though useful, provided only a temporary respite. After falling for several years, emissions of CFCs 11 and 12 began increasing again at the start of the 1980s as non-aerosol uses, such as foam blowing and refrigeration, took over from the sprays. By 1984 emissions were back to their 1977 levels and increasing by five per cent a year. Since the EEC's capacity was far greater than its actual production, freezing it did little to reduce the growth of the industry. But the initiatives did reduce public pressure for controls for several years. The issue lost much of its momentum, previously concerned bodies lost interest, and UNEP was left to shoulder most of the responsibility for keeping the issue on the international agenda.

UNEP's coordinating committee kept on meeting regularly and issuing reports throughout the late 1970s. It was a difficult time, not least because means of assessing the effect of CFCs on the ozone layer were still in their infancy. As new research came in, estimates of the likely depletion fluctuated widely from year to year, and some people used the uncertainty to cast doubt on the whole hypothesis. But the scientists at the heart of assessment process remained convinced that there was a serious global problem, and the committee's reports continued to stress this even as the methods of assessment were being improved. Had UNEP faltered at this point the issue would have vanished from inernational consciousness and vital years of research and cooperation would have been lost.

Convention for the Protection of the Ozone Layer

In 1980 the coordinating committee was finally able to produce assessments of potential depletion in which it had good confidence. These showed that there was, indeed, a serious threat to human health and the well-being of the Planet. So UNEP moved into the next stage of its programme. In 1981 the Governing Council set up a working group to prepare a global framework convention for the protection of the ozone layer. This followed a successful formula which UNEP had originally developed to secure agreements between costal nations to conserve common seas. First, a general treaty resolved in principle to tackle a problem; then the parties got down to the more difficult task of agreeing protocols that established specific controls.

Even the first, relatively easy, step proved remarkably hard. The Convention for the Protection of the Ozone Layer, finally agree in Vienna in 1985, appears unexceptionable Nations agreed to take "appropriate measures ... to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer"; but the measures are unspecified. There is no mention of any substance that might harm the ozone, and CFCs only appear towards the end of the annex to the treaty, where they are mentioned as chemicals that should be monitored. The main thrust of the convention is to encourage research, cooperation among countries and exchange of information. Even so it took four years to prepare and agree. Twenty nations signed it in Vinna, but most did not rush to ratify it. Nevertheless, it set an important precedent. For the first time nations agreed in principle to tackle a global environmental problem before its effects were felt, or even scientifically proven.

Need for Urgency

As it happened, a scientific paper that would transform both scientific and political perceptions of the problem was awaiting publication while the delegates were meeting. It reported the work of Dr. Joe Farman and colleagues from the British Antarctic Survey. In October 1982, taking measurements from Halley Bay, they had noticed that much of the ozone overhead seemed to have disappeared.

This seemed incredible: no-one had ever predicted ozone depletion on this scale. It seemed to be directly contradicted by published ozone measurements from the American weather satellite, Nimbus 7, which showed no trace of such a development. The scientists went back in October 1983 and 1984 and found even less ozone. With some courage, they wrote a paper reporting their discovery and sent it to the scientific magazine, Nature, it arrived in the journal's officers on Christmas Eve and was published the following May, less than two months after the Vienna conference. It caused a scientific sensation. The NASA scientists looked again at their satellite data and found that Nimbus 7 had indeed been recording such ozone levels, but that their computers had been programmed to discard them automatically as spurious before they were ever seen by the human eye. Fortunately, the measurements had been stored and, when they were retrieved, the extent of the Antarctic ozone hole became clear.

At first the shock had little impact outside the scientific community. Progress towards international agreement on regulation to control

CFCs continued to be show. UNEP had filed to achieve agreement on a protocol at the Vienna meeting. But the meeting did ask Dr. Mostaga Tolba, UNEP's Executive Director, to convene another full-scale conference to adopt a CFC protocol, if possible in 1987.

UNEP set about the task with urgency. That May 1985, the Governing Council set up a steering committee to prepare the protocol. It planned a rapid series of meetings to address the scientific aspects, the anticipated effects of ozone depletion, costs and alternative control strategies — in effect constituted an international risk assessment. The Coordinating Committee on the Ozone Layer met twice to summarize the latest scientific understanding of the issues and an *ad hoc* meeting of scientific experts met in London to develop a paper on scientific issues which policy-makers should be aware of in developing a protocol. A two-part workshop was called to consider what elements the protocol might contain. The first workshop session in Rome, in May 1986 — which examined national production, use and trade statistics for CFCs — was a grave disappointment, characterised by bad temper and disagreement. But the second session in Leesburg, on the Virginian bank of the River Potomac that September, was a complete contrast — although it was addressing the far more difficult subject of looking at alternative ways of regulating the chemicals. The Leesburg meeting considered various options for controls, but took care not to contrast them or choose between them. In the friendly atmosphere important concessions were made, trust was built up, and for the first time an obvious international will to forge a successful protocol emerged.

UNEP then took a calculated risk by pressing ahead with three negotiating conferences in rapid succession. The negotiators met in December 1986 and in February and April 1987, leaving only enough time between them to prepare the conference documents. Scientific opinion, made available to the conferences through the Coordinating Committee on the Ozone Layer, had hardened. Although the scientists were still unsure about the cause of the ozone hole, new evidence was confirming its existence, and this demanded a precautionary approach. The scientific consensus was clear; the release of CFCs and other potential ozone-destroying chemicals was subjecting the atmosphere to vast, uncontrolled experiment — and unless emissions were reduced, severe depletion would eventually result.

At first the negotiations failed to respond either to the scientific warnings or to the constructive spirit generated at Leesburg. The first two conferences could not agree either on which chemicals were to be regu-

Freeze on Consumption

The heart of the treaty is a series of ever more stringent limits on CFC use. Each party must at least freeze its consumption of the five controlled CFCs — CFCs 11, 12, 113, 114 and 115 — at 1986 levels by July 1, 1989. By mid — 1993 consumption must be no more than 80 per cent of 1986 levels, and by mid-1996 it must be down to a half. The first of these cuts takes place automatically. The second is "semiautomatic"; it comes into effect unless two-thirds of the parties, representing at least two thirds of world consumption, decide otherwise on the basis of the best available scientific and other evidence.

Meanwhile consumption of the three halons — Halons 1211, 1301 and 2402 — must be at least frozen at 1986 levels by February 1, 1992. These chemicals are much less widely then the CFCs, but global consumption has been growing even more rapidly: so their use may actually have to be cut heavily in 1992 to achieve a freeze at 1986 levels.

Consumption is calculated by weighting the chemicals according to their power to destroy the ozone layer. They are all given figures corresponding to their relative "Ozone Depleting Potential" (ODP); CFCs 11, 12 and 114 are weighted at 1 in the Protocol and the other values range from 0.6 for CFC 115 to 10 for Halon 1301. So, for example, each tonne consumed of CFC 11 is equivalent to 600 kg of CFC 115. The actual amounts of each chemical that a country consumes (that is its production plus its imports, minus what it exports) are multiplied by their ODPs and the resulting figure added together to give the total "consumption", which has first to be frozen, then reduced. This gives vountried flexibility, while protecting the ozone; and country can decide to cut its use of any combination of the substances in meeting the targets set by the treaty.

Cuts in Production

The Protocol also binds countries to make similar cuts in the production of the chemicals, but gives them somewhat more latitude than over consumption levels. Production levels have to be frozen and cut in parallel with consumption. But the treaty recognises that some countries will need some extra allowance, firstly to produce chemicals for developing countries (which are treated rather differently under the agreement, see below), and secondly because the international industry will rationalise itself as it shrinks (as a factory in one country closes part of its production may be transferred to a plant in another nation). So any country is allowed 10 per cent extra production on the CFC and halon freezes at the first CFC cut, and a 15 per cent excess at the second and larger cut.

No latitude is granted to any country which delays joining the treaty; it still has to observe the phase-down time table, giving a powerful incentive to nations to ratify quickly.

Concessions

Several groups of countries secured concessions to help them over particular difficulties and to respect international equity. Countries with small CFC industries — producing less than 25,000 tonnes a year — are allowed to trade production excesses greater than those listed above with other parties, provided their total combined production does not exceed the limits: this allows countries like Canada to rationalise their industry efficiently, without unnecessary closures. Centrally planned economies are allowed to include in their 1986 production levels the projected output from facilities contracted before the agreement of the Protocol, provided that they are completed by 1991 and do not raise the country's consumption above 500 grams a head: this recognises that the Soviet Union, for example, has legally binding contracts to produce the chemicals and export them to its trading partners. And the EEC is allowed to reduce their consumption for all its member states together, provided all of them are party to the treaty.

The biggest concession is to developing countries. Provided its yearly consumption of the chemicals is less than 300 grams a head *e.g.*, less than a quarter of US level), a developing country can delay implementation of the phase-down schedule for ten years, so as to meet its "basic domestic needs". This recognises that developing countries may need to increase their consumption as they develop, but still brings it under long-term control. Developing countries that join the treaty are guaranteed access to alternative substances and technology, and offered subsidies, aid, credit guarantees or insurance programmes for their use — an attractive inducement denied to non-parties.

Much of the teeth of the treaty is in its trade provisions. All parties must ban imports of the bulk chemicals from non-parties by the beginning of 1990, and effectively do the same for imports of products containing the chemicals within another three years. Meanwhile, developing countries enjoying the ten years delay in implementation must not export the chemicals to non-parties from the start of 1993. Taken together, these stringent restrictions in trade provide a strong incentive to countries to join the treaty or lose their markets and supplies.

Monitoring Effectiveness

Equally important, the treaty binds the parties to examine the effectiveness of the control measures in 1990 and every four years afterwards on the basis of expert assessments of scientific, environmental, economic and technical information. This allows the treaty to be tightened without complete renegotiation. The parties have already decided to speed up the assessment process and a review of the current information has begun.

The treaty does not go as far as to agree the virtual elimination of the chemicals sought by some countries. Nor does it fulfil the 85 per cent in emissions of the chemicals that most scientists say is necessary to protect the atmosphere. But it goes very much further than many important countries were prepared to accept even a few months either. And it makes it possible for developing countries to join the system of controls; especially important because certain developing countries with large populations could effectively negate the impact of the treaty if they develop unrestricted production and consumption of the chemicals.

If both developed and developing countries observe the treaty — computer models predicted at the time — it would stabilise depletion of the ozone layer at a few per cent during the first decade of the next century; without it massive depletion would develop. In human terms the treaty would prevent 1,860,000 deaths from skin cancer and 38 million cataracts among people born before the year 2075. It would also cut the contribution of CFCs to global warming by about a third.

The treaty is only a first step. It will not repair the damage to the earth's atmosphere or close the ozone hole. For the greater cuts will be needed. But, following the success of the Protocol, international opinion is already swinging rapidly behind tougher measures, and use of the chemicals is being reduced even faster then the treaty requires.

THE FOLLOW-UP

Continuing Vigilance

Even as the delegates to the Montreal conference were hammering out the details of the Protocol, a remarkable scientific experiment was taking place at the other end of the Americas. One Hundred and fifty scientists and support staff from 19 organisations were working together from Punta Arenas in Chile — the world's southernmost city — to resolve the mystery of the Antarctic ozone hole. The Airborne Antarctic Ozone Experiment centred around two aircraft, packed with scientific instrumentation

-- a converted DC 8 airliner with a team of scientists abroad, and a one-man single-engined ER-2, an upgraded version of the U2 spy plane, which could fly 20 km up into the stratosphere. In August and September 1987, both planes flow 12 missions — a total of 1,75,000 km — into the area of the ozone hole. Until then, the suspicion that CFC's were primarily responsible for the hole was just the most likely theory among many. But the direct measurements taken by the airborne experiment proved the chemicals, guilt beyond reasonable doubt.

Two weeks to the day after the first signing of the Montreal Protocol, the researchers announced their preliminary conclusions: they were published in full in April, 1988. Within two and a half years of the publication of the first paper reporting the hole, the world's scientists had unraveled the complex meteorology and chemistry of the Antarctic stratosphere and worked out what was causing it — an extraordinary scientific achievement.

There was further disturbing evidence to come. In March 1988, another massive study convincingly demonstrated, for the first time, that the ozone layer is being destroyed on a global scale. NASA's Ozone Trends Panel brought together more than 100 scientists from ten countries to reanalyse and interpret almost all the measurements ever taken of ozone levels. The panel concluded that the ozone layer has decreased by about one per cent in summer and four per cent in winter between 64 and 30 degrees north — the area of the world (outside Antarctica) where the most reliable data is available. Alarmingly, this is about double the depletion predicted by computer models. And the study also reported a year-round depletion of five per cent at all latitudes south of 60 degrees S, which the models had failed to predict.

The existence of the Antarctic ozone hole and the confirmation that man-made chemicals were responsible naturally raised fears that a similar event could occur in the Arctic springtime. A re-examination of ozone observations from the northern hemisphere by the Ozone Trends Panel had, in 1988, indicated ozone losses greater than had been predicted between latitudes 30 and 64 degrees north particularly in the winter months.

It was now essential to determine if there were Artic ozone losses similar to those observed over the South Pole and if so, were chlorofluorocarbons the cause.

An international Airborne Arctic Stratospheric Expedition was mounted from January 3, 1989 to February 15, 1989 involving more than one hundred scientists and using an ER2 and a DC8 aircraft.

The results obtained confirmed the gloomiest predictions. Chlorine monoxide, the active ozone depleting radical formed by the decomposition of CFCs in the stratosphere, was found to be present in the Arctic stratosphere in amounts of up to fifty times the natural level. The special physical and chemical conditions for ozone destruction including the presence of polar stratospheric clouds were consistent with the situation found over Antarctica in 1987 immediately prior to the opening of the ozone hole.

No loss in ozone was observed during the mission but the scientists concluded that the atmosphere was primed for ozone destruction as the springtime approached. The extent of the eventual ozone loss would depend on the persistence of the polar vortex into the springtime and could, if breaking sufficiently early, allow ozone rich air to flow from extrapolar regions and prevent observable ozone loss in the area. Even so, this would provide only could comfort for ozone watchers given the observed abundance of ozone-ethal chemicals in the region confirming the need for tougher regulatory measures in the Montreal Protocol if the fragile atmosphere is to be saved.

Taken together, these studies demonstrated that the Montreal Protocol does not go far enough. The treaty will allow levels of chlorine in the atmosphere to double over the next 50 years and go on rising thereafter. As the time it was agreed, this seemed tolerable; the best computer models suggested that depletion of the ozone layer would stabilise within 30 years, under these circumstances, and then possibly recover. But the work of the Ozone Trends Panel strongly suggests that the models underestimated the danger. Furthermore, the Protocol was never designed to heal the ozone hole; now that we know that CFCs are to blame, we also know that stricter controls will be necessary if the hole is not to deepen.

Need for Further Action

The Montreal Protocol was ahead of the scientific knowledge of its time, but science has since overtaken it. Further cuts in CFC usage — such as an immediate 85 per cent reduction or a gradual 95 per cent phase-down — will be necessary if chlorine levels are to be reduced and ozone slowly repaired.

As this became clear during the course of 1988, UNEP faced a delemma. The reductions laid down in the Protocol represented the limit of what had been politically a achievable. UNEP came under pressure to reopen the negotiations, but it had no power to do so as the Protocol was not yet in force. In any case a renegotiation at this stage would have endangered the entire delicate package. So it pressed ahead with securing enough ratifications to bring the Protocol into effect on schedule, and accelerated the reassessment procedures laid down in the treaty.

New Initiatives

Meanwhile the treaty created a dynamic of its own, because its very existence served notice that international tolerance of the chemicals would not last long. Governments, industries and consumers all took rapid initiatives to better the Protocol's requirements, even before it came into force.

In June 1988, Sweden became the first country to legislate a phase-out of CFCs: consumption will be cut in half by 1991 and virtually eliminated by the end of 1994. Finland, the Netherlands and Norway have all said that they intend to reduce CFC use faster than the Protocol requires. The United States Environmental Protection Agency has called for a complete phase-out and the Japanese Government has indicated that it will help finance the search for safe substitutes. And the United Kingdom, one of the more sceptical developed countries in the pre-Montreal negotiations, has announced that it will halve consumption by the end of 1989 and reduce it by 85 per cent "as soon as possible". This followed a personal commitment to the issue by Prime Minister Margaret Thatcher who, together with UNEP, called a special conference in London in March 1989 to mobilise international will for further reductions.

Industry has moved even faster. Voluntary 90 per cent cutbacks in the use of CFCs in propellants have been announced by industry in Belgium, the Federal Republic of Germany, the Netherlands, Switzerland and the United Kingdom, while the Soviet Union has said it intends to stop using them by 1993. The United States food packaging industry, comprising some 100 companies, voluntarily abandoned CFCs in December 1988. Meanwhile Dupont, Allied Corporation, Pennwalt Corporation and ICI Americas — which account for 85 per cent of US CFC — production — have announced that they plan to phase out manufacture of all CFCs controlled by the Montreal Protocol.

Incentive for Change

A race has begun to find substitute chemicals that do not damage the ozone layer. Companies estimate they may spend $5 billion over the next decade in developing and producing these alternatives. But the new chemicals must not pose unacceptable threats either to the world's systems or to human health. Remarkably, 14 chemical companies from the United States, Europe, Japan and South Korea have agreed to pool their resources to test the safety of proposed substitutes, thus speeding up the process. Just as important, companies are also concentrating on recovering and recycling CFCs so as to re-use them instead of releasing them to the atmosphere. Companies in Switzerland and the United Kingdom have developed technologies that can recover 8-90 per cent of the CFCs used in foam blowing; computer companies in the Federal Republic of Germany and the United States are recovering 70-90 per cent of the CFCs they use for clearing; and several towns in the Federal Republic have begun collecting discarded household refrigerators to stop the CFCs in them from escaping to the atmosphere. Recycling and conservation also offer one of the best short-term prospects for controlling the use of halons.

Part of all this activity has been stimulated by the scientific findings on ozone depletion. Part has been forced by public pressure; consumers have threatened boycotts of CFCs and major retail chains have discouraged products that contain them. But perhaps the most important factor of all has been the appreciation that new markets are developing for ozone-friendly substances. This strong commercial incentive for change would not have emerged if the Montreal Protocol had not clearly signalled that the end was in sight for CFCs.

International regulation and voluntary restrain are interreacting. The treaty has stimulated voluntary cutbacks that go far beyond its provisions, and these, in turn, make it easier to tighten international controls. The Montreal Protocol was the prerequisite for action. Though only a first step, as was realised at the time, it is proving, indeed, to be a giant step for all mankind.

DOCUMENT — 9

Rio Declaration on Environment and Development Preamble

The United Nations Conference on Environment and Development.

Having met at Rio de Janeiro from 3 to 14 June 1992.

Reaffirming the Declaration of the United Nations Conference on the Human Environment, adopted at Stockholm on 16 June 1972, and seeking to build upon it.

With the goal of establishing a new and equitable global partnership through the creation of new levels of cooperation among States, key sectors of societies and people.

Working towards international agreements which respect the interests of all and protect the integrity of the global environmental and developmental system.

Recognising the integral and interdependent nature of the Earth, our home.

Proclaims that:

PRINCIPLE 1

Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

PRINCIPLE 2

States have, in accordance with the Charter of the United Nations and the principles of international law, he sovereign right to exploit their own resources pursuant to their own environmental and development policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

PRINCIPLE 3

The right to development must be fulfilled so as to equitably meet development and environmental needs of present and future generations.

PRINCIPLE 4

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

PRINCIPLE 5

All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world.

PRINCIPLE 6

The special situation and needs of developing countries, particularly the least developed and those most environmentally vulnerable, shall be given special priority. International actions in the field of environment and development should also address the interests and needs of all countries.

PRINCIPLE 7

States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation. States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

PRINCIPLE 8

To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.

PRINCIPLE 9

States should cooperate to strengthen endogenous capacity-building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

PRINCIPLE 10

Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy; shall be provided.

PRINCIPLE 11

States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply. Standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries.

PRINCIPLE 12

States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus.

PRINCIPLE 13

States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.

PRINCIPLE 14

States should effectively cooperate to discourage or prevent the relocation and transfer to other States of any activities and substances that cause severe environmental degradation or are found to be harmful to human health.

PRINCIPLE 15

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

PRINCIPLE 16

National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

PRINCIPLE 17

Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

PRINCIPLE 18

States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to hselp States so afflicted.

PRINCIPLE 19

States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.

PRINCIPLE 20

Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development.

PRINCIPLE 21

The creativity, ideals and courage of the youth of the world should be mobilized to forge a global partnership in order to achieve sustainable development and ensure a better future for all.

PRINCIPLE 22

Indigenous people and their communities, and other local communities, have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

PRINCIPLE 23

The environment and natural resources of people under oppression, domination and occupation shall be protected.

PRINCIPLE 24

Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.

PRINCIPLE 25

Peace, development and environmental protection are interdependent and indivisible.

PRINCIPLE 26

States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations.

PRINCIPLE 27

States and people shall cooperate in good faith and in a spirit of partnership in the fulfillment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development.

DOCUMENT — 10

United Nations Framework Convention on Climate Change

The Parties to this Convention

Acknowledging that change in the Earth's climate and its adverse effects are a common concern of humankind.

Concerned that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, that these increases enhance the natural greenhouse effect, and that this will result on average in an additional warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems and humankind.

Noting that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relavitely low and that the share of global emissions originating in developing countries will grow to meet their social and development needs.

Aware of the role and importance in terrestrial and marine ecosystems of sinks and reservoirs of greenhouse gases.

Noting that there are many uncertainties in predictions of climate change, particularly with regard to the timing, magnitude and regional patterns thereof.

Acknowledging that the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions.

Recalling the pertinent provision of the Declaration of the United Nations Conference on the Human Environment, adopted at Stockholm on 16 June 1972.

Recalling also that States have, in accordance with the Charter of the United Nations and principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other. States or of areas beyond the limits of national jurisdiction.

Reaffirming the principle of sovereignty of States in international cooperation to address climate change.

Recognizing the States should enact effective environmental legislation, that environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply, and that standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries

Recalling the provisions of General Assembly resolution 44/228 of 22 December 1989 on the United Nations Conference on Environment and Development, and resolutions 43/53 of 6 December 1988, 44/207 of 22 December 1989, 45/212 of 21 December 1990 and 46/169 of 19 December 1991 on protection of global climate for present and future generations of mankind.

Recalling also the provisions of General Assembly resolution 44/206 of 22 December 1989 on the possible adverse effect of sea level rise on islands and coastal areas, particularly low-lying coastal areas and implementation of the Plan of Action to Combat Desertification.

Recalling further the Vienna Convention for the Protection of the Ozone Layer, 1985, and the Montreal Protocol on Substances that Deplete the Ozone Layer, 1987, as adjusted and amended on 29 June 1990.

Noting the Ministerial Declaration of the Second World Climate Conference adopted on 7 November 1990.

Conscious of the valuable analytical work being conducted by many States on climate change and of the important contributions of the World Meteorological Organization, the United Nations Environment Programme and other organs, organizations and bodies of the United Nations system, as well as other international and intergovernmental bodies, to the exchange of results of scientific research and the coordination of research.

Recognizing that steps required to understand and address climate change will be environmentally, socially and economically most effective if they are based on relevant scientific, technical and economic considerations and continually reevaluated in the light of new findings in these areas.

Recognizing that various actions to address climate change can be justified economically in their own right and can also help in solving other environmental problems.

Recognizing also the need for developed countries to take immediate action in a flexible manner on the basis of clear priorities, as a first step towards comprehensive response strategies at the global, national and, where agreed, regional levels that take into account all greenhouse gases, with due consideration of their relative contributions to the enhancement of the greenhouse effect.

Recognizing further that low-lying and other small island countries, countries with low-lying coastal, arid and semi-arid areas or areas liable to floods, drought and desertification and developing countries with fragile mountainous ecosystems are particularly vulnerable to the adverse effects of climate change.

Recognizing the special difficulties of those countries, especially developing countries, whose economies are particularly dependent on fossil fuel production, use and exportation, as a consequences of action taken on limiting greenhouse gas emissions.

Affirming that responses to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty.

Recognizing that all countries, especially developing countries need access to resources required to achieve sustainable social and economic development and that, in order for developing countries to progress towards that goal, their energy consumption will need to grow taking into account the possibilities for achieving greater energy efficiency and for controlling greenhouse gas emissions in general, including through the application of new technologies on terms which make such an application economically and socially beneficial.

Determined to protect the climate system for present and future generations.

Have agreed as follows:

ARTICLE I

DEFINITIONS*

* Titles of articles are include solely to assist the reader.

For the purposes of this Convention:

1. "Adverse effects of climate change" means changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare.

2. "Climate change" means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

3. "Climate system" means the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions.

4. "Emissions" means the release of greenhouse gases and/or their precursors into the atmosphere over a specified area and period of time.

5. "Greenhouse gases" means those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation.

6. "Regional economic integration organization" means an organization constituted by sovereign States of a given regions which has competence in respect of matters governed by this Convention or its protocols and has been duly authorized, in accordance with its internal procedures, to sign, ratify, accept, approve or accede to the instruments concerned.

7. "Reservoir" means a component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored.

8. "Sink" means any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere.

9. "Source" means any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere.

ARTICLE 2

OBJECTIVE

The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

ARTICLE 3

PRINCIPLES

In their actions to achieve the objective of the Convention and to implement its provisions, the Parties shall be guided, *inter alia*, by the following:

1. The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.

2. The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration.

3. The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefit at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties.

4. The Parties have a right to, and should, promote sustainable development. Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change.

5. The Parties should cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties, particularly developing country

Parties, thus enabling them better to address the problems of climate change. Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.

ARTICLE 4

COMMITMENTS

1. All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities objectives and circumstances, shall:

(a) Develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties.

(b) Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change;

(c) Promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, agriculture, forestry and waste management sectors;

(d) Promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems;

(e) Cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods;

(f) Take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change;

(g) Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the under-standing and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies;

(h) Promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies;

(i) Promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non-governmental organizations; and

(j) Communicate to the Conference of the Parties information related to implementation, in accordance with Article 12.

2. The developed country Parties and other Parties included in annex I commit themselves specifically as provided for in the following:

(a) Each of these Parties shall adopt national[1] policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of the Convention, recognizing that the return by the end of the present decade to earlier levels of anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol would contribute to such modification and taking into account the differences in these Parties' starting points and approaches, economic structures and resource bases, the need to maintain strong and sustainable economic growth, available technologies and other individual circumstances, as well as the need for equitable and appropriate contributions by each of these Parties to the global effort regarding that objective. These Parties may implement such policies and measures jointly with other Parties and may assist other Parties in contributing to the achievement of the objective of the Convention and, in particular, that of this subparagraph;

(b) In order to promote progress to this end, each of these Parties shall communicate, within six months of the entry into force of the Convention for it and periodically thereafter, and in accordance with Article 12, detailed information on its policies and measures referred to in subparagraph (a) above, as well as on its resulting projected anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol for the period referred to in subparagraph (a), with the aim of returning individually or jointly to their 1990 level of these anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol. This information will be reviewed by the Conference of the Parties, at its first session and periodically thereafter, in accordance with Article 7;

(c) Calculations of emissions by sources and removals by sinks of greenhouse gases for the purposes of subparagraph (b) above should take into account the best available scientific knowledge, including of the effective capacity of sinks and the respective contributions of such gases to climate change. The Conference of the Parties shall consider and agree on methodologies for these calculations at its first session and review them regularly thereafter.

(d) The Conference of the Parties shall, at its first session, review the adequacy of subparagraphs (a) and (b) above. Such review shall be carried out in the light of the best available scientific information and assessment on climate change and its impacts, as well as relevant technical, social and economic information. Based on this review, the Conference of the Parties shall take appropriate action, which may include the adoption of amendments to the commitments in subparagraphs (a) and (b) above. The Conference of the Parties, at its first session, shall also take decisions regarding criteria for joint implementation as indicated in subparagraph (a) above. A second review of subparagraphs (a) and (b) shall take place not later than 31 December 1998, and thereafter at regular intervals determined by the Conference of the Parties, until the objective of the

Convention is met;

(e) Each of these Parties shall:
   (i) coordinate as appropriate with other such Parties, relevant economic and administrative instruments developed to achieve the objective of the Convention; and
   (ii) identify and periodically review its own policies and practices which encourage activities that lead to greater levels of anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol than would otherwise occur;

(f) The Conference of the Parties shall review, not later than 31 December 1998, available information with a view to taking decisions regarding such amendments to the lists in annexes I and II as may be appropriate, with the approval of the Party concerned;

(g) Any Party included in annex I may, in its instrument of ratification, acceptance, approval or accession, or at any time thereafter, notify the Depositary that it intends to be bound by subparagraphs (a) and (b) above. The Depositary shall inform the other signatories and Parties of any such notification.

3. The developed country Parties and other developed Parties included in annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1. They shall also provide such financial resources, including for the transfer to technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing measures that are covered by paragraph 1 of this Article and that are agreed between a developing country Party and the international entity or entities referred to in Article 11, in accordance with that Article. The implementation of these commitments shall take into account the need for adequacy and predictability in the flow of founds and the importance of appropriate burden sharing among the developed country Parties.

4. The developed country Parties and other developed Parties included in annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adoption of those adverse effects.

5. The developed country Parties and other developed Parties included in annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the

Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies.

6. In the implementation of their commitments under paragraph 2 above, a certain degree of flexibility shall be allowed by the Conference of the Parties to the Parties included in annex I undergoing the process of transition to a market economy, in order to enhance the ability of these Parties to address climate change, including with regard to the historical level of anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol chosen as a reference.

7. The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.

8. In the implementation of the commitments in this Article, the Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impact of the implementation of response measures, especially on:

(a) Small island countries;
(b) Countries with low-laying coastal areas;
(c) Countries with arid and semi-arid areas, forested areas and areas liable to forest decay;
(d) Countries with areas prone to natural disasters;
(e) Countries with areas liable to drought and desertification;
(f) Countries with areas of high urban atmospheric pollution;
(g) Countries with areas with fragile ecosystems, including mountainous ecosystems;
(h) Countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products; and
(i) Land-locked and transit countries.

Further, the Conference of the Parties may take actions, as appropriate, with respect to this paragraph.

9. The Parties shall take full account of the specific needs and special situations of the least developed countries in their actions with regard to funding and transfer of technology.

10. The Parties shall, in accordance with Article 10, take into consideration in the implementation of the commitments of the Convention the situation of Parties, particularly developing country Parties, with economies that are vulnerable to the adverse effects of the implementation of measures to respond to climate change. This applies notably to Parties with economies that are highly dependent on income generated from the production, processing and export, and/or consumption of fossil fuels and associated energy-intensive products and/or the use of fossil fuels for which such Parties have serious difficulties in switching to alternatives.

ARTICLE 5

RESEARCH AND SYSTEMATIC OBSERVATION

In carrying out their commitments under Article 4, paragraph 1(g), the Parties shall:

(a) Support and further develop, as appropriate, international and intergovernmental programmes and networks or organizations aimed at defining, conducting, assessing and financing research, data collection and systematic observation, taking into account the need to minimize duplication of effort;

(b) Support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries, and to promote access to, and the exchange of, data and analyses thereof obtained from areas beyond national jurisdiction; and

(c) Take into account the particular concerns and needs of developing countries and cooperate in improving their endogenous capacities and capabilities to participate in the efforts referred to in subparagraphs (a) and (b) above.

ARTICLE 6

EDUCATION, TRAINING AND PUBLIC AWARENESS

In carrying out their commitments under Article 4, paragraph 1 (i), the Parties shall:

(a) Promote and facilitate at the national and, as appropriate, subregional and regional levels, and in accordance with national laws and regulations, and within their respective capacities:

- (i) the development and implementation of educational and public awareness programmes on climatic change and its effects;
- (ii) public access to information on climate chance and its effects;
- (iii) public participation in addressing climate change and its effects and developing adequate responses; and
- (iv) training of scientific, technical and managerial personnel.

(b) Cooperate in and promote, at the international level, and, where appropriate, using existing bodies:

- (i) the development and exchange of educational and public awareness material on climate change and its effects; and
- (ii) the development and implementation of education and training programmes, including the strengthening of national institutions and the exchange or secondment of personnel to train experts in this field, in particular for developing countries.

ARTICLE 7

CONFERENCE OF THE PARTIES

1. A Conference of the Parties is hereby established.

2. The Conference of the Parties, as the supreme body of this Convention, shall keep under regular review the implementation of the Convention and any related legal instruments that the Conference of the Parties may adopt, the shall make, within its mandate, the decisions necessary to promote the effective implementation of the Convention. To this end, it shall:

(a) Periodically examine the obligations of the Parties and the institutional arrangements under the Convention, in the light of the objective of the Convention, the experience gained in its implementation and the evolution of scientific and technological knowledge;

(b) Promote and facilitate the exchange of information on measures adopted by the Parties to address climate change and its effects, taking into account the differing circumstances, responsibilities and capabilities of the Parties and their respective commitments under the Convention;

(c) Facilitate, at the request of two or more Parties, the coordination of measures adopted by them to address climate change and its effects, taking into account the differing circumstances, responsibilities and capabilities of the Parties and their respective commitments under the Convention.

(d) Promote and guide, in accordance with the objective and provisions of the Convention, the development and periodic refinement of comparable methodologies, to be agreed on by the Conference of the Parties, *inter alia*, for preparing inventories of greenhouse gas emissions by sources and removals by sinks, and for evaluating the effectiveness of measures to limit the emissions and enhance the removals of these gases;

(e) Assess, on the basis of all information made available to it in accordance with the provisions of the Convention, the implementation of the Convention, by the Parties, the overall effects of the measures taken pursuant to the Convention, in particular environmental, economic and social effects as well as their cumulative impacts and the extent to which progress towards the objective of the Convention is being achieved;

(f) Consider and adopt regular reports on the implementation of the Convention and ensue their publication;

(g) Make recommendations on any matters necessary for the implementation of the Convention;

(h) Seek to mobilize financial resources in accordance with Article 4, paragraph 3, 4 and 5, and Article 11;

(i) Establish such subsidiary bodies as are deemed necessary for the implementation of the Convention;

(j) Review reports submitted by its subsidiary bodies and provide guidance to them;

(k) Agree upon and adopt, by consensus, rules of procedure and financial rules for itself and for any subsidiary bodies;

(l) Seek and utilize, where appropriate, the services and cooperation of, and information provided by, competent international organizations and intergovernmental and non-governmental bodies; and

(m) Exercise such other functions as are required for the achievement of the objective of the Convention as well as all other functions assigned to it under the Convention.

3. The Conference of the Parties shall, at its first session, adopt its own rules of procedure as well as those of the subsidiary bodies established by the Convention, which shall include decision-making procedures for matters not already covered by decision-making procedures stipulated in the Convention. Such procedures may include specified majorities required for the adoption of particular decisions.

4. The first session of the Conference of the Parties shall be convened by the interim secretariat referred to in Article 21 and shall take place not later than one year after the date of entry into force of the Convention. Thereafter, ordinary sessions of the Conference of the Parties shall be held every year unless otherwise decided by the Conference of the Parties.

5. Extraordinary sessions of the Conference of the Parties shall be held at such other times as may be deemed necessary by the Conference, or at the written request of any Party, provided that, within six months of the request being communicated to the Parties by the secretariat, it is supported by at least one-third of the Parties.

6. The United Nations, its specialized agencies and the International Atomic Energy Agency, as well as State member thereof or observers thereto not Party to the Convention, may be represented at sessions of the Conference of the Parties as observers. Any body or agency, whether national or international, governmental or non-governmental, which is qualified in matters covered by the Convention, and which has informed the secretariat of its wish to be represented at a session of the Conference of the Parties as an observer, may be so admitted unless at least one-third of the Parties present object. The admission and participation of observers shall be subjected to the rules of procedure adopted by the Conference of the Parties.

ARTICLE 8

SECRETARIAT

1. A secretariat is hereby established.

2. The functions of the secretariat shall be:

(a) To make arrangements for sessions of the Conference of the Parties and its subsidiary bodies established under the Convention and to provide them with services as required;

(b) To compile and transmit reports submitted to it;

(c) To facilitate assistance to the Parties, particularly developing country Parties, on request, in the compilation and communication of information required in accordance with the provisions of the Convention;

(d) To prepare reports on its activities and present them to the Conference of the Parties;

(e) To ensure the necessary coordination with the secretariats of other relevant international bodies;

(f) To enter, under the overall guidance of the Conference of the Parties, into such administrative and contractual arrangements as may be required for the effective discharge of its functions; and

(g) To perform the other secretariat functions specified in the Convention and in any of its protocols and such other functions as may be determined by the Conference of the Parties.

3. The Conference of the Parties, at its first session, shall designate a permanent secretariat and make arrangements for its functioning.

ARTICLE 9

SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

1. A subsidiary body for scientific and technological advice is hereby established to provide the Conference of the Parties and, as appropriate, its other subsidiary bodies with timely information and advice on scientific and technological matters relating to the Convention. This body shall be open to participation by all Parties and shall be multidisciplinary. It shall comprise government representatives competent in the relevant field of expertise. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the guidance of the Conference of the Parties, and drawing upon existing competent international bodies, this body shall:

(a) Provide assessments of the state of scientific knowledge relating to climate change and its effects;

(b) Prepare scientific assessments on the effects of measures taken in the implementation of the Convention;

(c) Identify innovative, efficient and state-of-the-art technologies and know-how and advise on the ways and means of promoting development and/or transferring such technologies;

(d) Provide advice on scientific programmes, international cooperation in research and development related to climate change, as well as on ways and means of supporting endogenous capacity-building in developing countries; and

(e) Respond to scientific, technological and methodological questions that the Conference of the Parties and its subsidiary bodies may put to the body.

3. The functions and terms of reference of this body may be further elaborated by the Conference of the Parties.

ARTICLE 10

SUBSIDIARY BODY FOR IMPLEMENTATION

1. A subsidiary body for implementation is hereby established to assist the Conference of the Parties in the assessment and review of the effective implementation of the Convention. This body shall be open to participation by all Parties and comprise government representatives who are experts on matters related to climate change. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the guidance of the Conference of the Parties, this body shall:

(a) Consider the information communicated in accordance with Article 12, paragraph 1, to assess the overall aggregated effect of the steps taken by the Parties in he light of the latest scientific assessments concerning climate change;

(b) Consider the information communicated in accordance with Article 12, paragraph 2, in order to assist the Conference of the Parties in carrying out the reviews required by Article 4, paragraph 2(d); and

(c) Assist the Conference of the Parties, as appropriate, in the preparation and implementation of its decisions.

ARTICLE 11

FINANCIAL, MECHANISM

1. A mechanism for the provision of financial resources on a grant or concessional basis, including for the transfer of technology, is hereby defined. It shall function under the guidance of and be accountable to the Conference of the Parties, which shall decide on its policies, programme

priorities and eligibility criteria related to this Convention. Its operation shall be entrusted to one or more existing international entities.

2. The financial mechanism shall have an equitable and balanced representation of all Parties within a transparent system of governance.

3. The Conference of the Parties and the entity or entities entrusted with the operation of the financial mechanism shall agree upon arrangements to give effect to the above paragraphs, which shall include the following:

(a) Modalities to ensure that the funded projects to address climate change are in conformity with the policies, programme priorities and eligibility criteria established by the Conference of the Parties;

(b) Modalities by which a particular funding decision may be reconsidered in light of these policies, programme priorities and eligibility criteria;

(c) Provisions by the entity or entities of regular reports to the Conference of the Parties on its funding operations, which is consistent with the requirement for accountability set out in paragraph I above; and

(d) Determination in a predictable and identifiable manner of the amount of funding necessary and available for the implementation of this Convention and the conditions under which that amount shall be periodically reviewed.

4. The Conference of the Parties shall make arrangements to implement the above mentioned provisions at its first session, reviewing and taking into account the interim arrangements referred to in Article 21, paragraph 3, and shall decide whether these interim arrangements shall be maintained. Within four years thereafter, the Conference of the Parties shall review the financial mechanism and take appropriate measures.

5. The developed country Parties may also provide and developing country Parties avail themselves of, financial resources related to the implementation of the Convention through bilateral, regional and other multilateral channels.

ARTICLE 12

COMMUNICATION OF INFORMATION RELATED TO IMPLEMENTATION

1. In accordance with Article 4, paragraph 1, each Party shall communi-

cate to the Conference of the Parties, through the secretariat, the following elements of information:

(a) A national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, to the extent its capacities permit, using comparable methodologies to be promoted and agreed upon by the Conference of the Parties;

(b) A general description of steps taken or envisaged by the Party to implement the Convention; and

(c) Any other information that the Party considers relevant to the achievement of the objective of the Convention and suitable for inclusion in its communication, including, if feasible, material relevant for calculations of global emission trends.

2. Each developed country Party and each other Party included in annex I shall incorporate in its communication the following elements of information:

(a) A detailed description of the policies and measures that it has adopted to implement its commitment under Article 4, paragraphs 2(a) and 2(b); and

(b) A specific estimate of the effects that the policies and measures referred to in subparagraph (a) immediately above will have on anthropogenic emissions by its sources and removals by its sinks of greenhouse gases during the period referred to in Article 4, paragraph 2(a).

3. In addition, each developed country Party and each other developed Party included in annex II shall incorporate details of measures taken in accordance with Article 4, paragraphs 3, 4 and 5.

4. Developing country Parties may, on a voluntary basis, propose projects for financing, including specific technologies, materials, equipment, techniques or practices that would be needed to implement such projects, along with, if possible, an estimate of all incremental costs, of the reductions of emissions and increments of removals of greenhouse gases, as well as an estimate of the consequent benefits.

5. Each developed country Party and each other Party included in annex I shall make its initial communication within six months of the entry into force of the Convention for that Party. Each Party not so listed shall make its initial communication within three years of the entry into force of the Convention for that Party, or of the availability of financial resources in accordance with Article 4, paragraph 3. Parties that are least developed countries may make their initial communication at their dis-

cretion. The frequency of subsequent communications by all Parties shall be determinated by the Conference of the Parties, taking into account the differentiated timetable set by this paragraph.

6. Information communicated by Parties under this Article shall be transmitted by the secretariat as soon as possible to the Conference of the Parties and to any subsidiary bodies concerned. If necessary, the procedures for the communication of information may be further considered by the Conference of the Parties.

7. From its first session, the Conference of the Parties shall arrange for the provision to developing country Parties of technical and financial support, on request, in compiling and communicating information under this Article, as well as in identifying the technical and financial needs associated with proposed projects and response measures under Article 4. Such support may be provided by other Parties, by competent international organizations and by the Secretariat, as appropriate.

8. Any group of Parties may, subject to guidelines adopted by the Conference of the Parties, and to prior notification to the Conference of the Parties, make a joint communication in fulfilment of their obligations under this Article, provided that such a communication includes information on the fulfilment by each of these Parties of its individual obligations under the Convention.

9. Information received by the secretariat that is designated by a Party as confidential, in accordance with criteria to be established by the Conference of the Parties, shall be aggregated by the secretariat to protect its confidentiality before being made available to any of the bodies involved in the communication and review of information.

10. Subject to paragraph 9 above, and without prejudice to the ability of any Party to make public its communication at any time, the secretariat shall make communications by Parties under this Article publicly available at the time they are submitted to the Conference of the Parties.

ARTICLE 13

RESOLUTION OF QUESTIONS REGARDING IMPLEMENTATION

The Conference of the Parties shall, at its first session, consider the establishment of a multilateral consultative process, available to Parties on their request, for the resolution of questions regarding the implementation of the Convention.

ARTICLE 14

SETTLEMENT OF DISPUTES

1. In the event of a dispute between any two or more Parties concerning the interpretation or application of the Convention, the Parties concerned shall seek a settlement of the dispute through negotiation or any other peaceful means of their own choice.

2. When ratifying, accepting, approving or acceding to the Convention, or at any time thereafter, a Party which is not a regional economic integration organization may declare in a written instrument submitted to the Depositary that, in respect of any dispute concerning the interpretation or application of the Convention, it recognizes as compulsory *ipso facto* and without special agreement, in relation to any Party accepting the same obligation:

(a) Submission of the dispute to the Inernational Court of Justice, and/or

(b) Arbitration in accordance with procedures to be adopted by the Conference of the Parties as soon as practicable, in an annex on arbitration.

A Party which is a regional economic integration organization may make a declaration with like effect in relation to arbitration in accordance with the procedures referred to in subparagraph (b) above.

3. A declaration made under paragraph 2 above shall remain in force until it expires in accordance with its terms or until three months after written notice of its revocation has been deposited with the Depositary.

4. A new declaration, a notice of revocation or the expiry of a declaration shall not in any way affect proceedings pending before the International Court of Justice or the arbitral tribunal, unless the parties to the dispute otherwise agree.

5. Subject to the operation of paragraph 2 above, if after twelve months following notification by one Party to another that a dispute exists between them, the Parties concerned have not been able to settle their dispute through the means mentioned in paragraph 1 above, the dispute shall be submitted, at the request of any of the parties to the dispute, to conciliation.

6. A conciliation commission shall be created upon the request of one of the parties to the dispute. The commission shall be composed of an equal number of members appointed by each party concerned and a

chairman chosen jointly by the members appointed by each party. The commission shall render a recommendatory award, which the parties shall consider in good faith.

7. Additional procedures relating to conciliation shall be adopted by the Conference of the Parties, as soon as practicable, in an annex on conciliation.

8. The provisions of this Article shall apply to any related legal instrument which the Conference of the Parties may adopt, unless the instrument provides otherwise.

ARTICLE 15

AMENDMENTS TO THE CONVENTION

1. Any Party may propose amendments to the Convention.

2. Amendments to the Convention shall be adopted at an ordinary session of the Conference of the Parties. The text of any proposed amendment to the Convention shall be communicated to the Parties by the secretariat at least six months before the meeting at which it is proposed for adoption. The secretariat shall also communicate proposed amendments to the signatories to the Convention and, for information, to the Depositary.

3. The Parties shall make every effort to reach agreement on any proposed amendment to the Convention by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting at the meeting. The adopted amendment shall be communicated by the secretariat to the Depositary, who shall circulate it to all Parties for their acceptance.

4. Instruments of acceptance in respect of an amendment shall be deposited with the Depositary. An amendment adopted in accordance with paragraph 3 above shall enter into force for those Parties having accepted in on the ninetieth day after the date of receipt by the Depositary of an instrument of acceptance by at least three-fourths of the Parties to the Convention.

5. The amendment shall enter into force for any other Party on the ninetieth day after the date on which that Party deposits with the Depositary its instrument of acceptance of the said amendment.

6. For the purposes of this Article, "Parties present and voting" means Parties present and casting an affirmative or negative vote.

ARTICLE 16

ADOPTION AND AMENDMENT OF ANNEXES TO THE CONVENTION

1. Annexes to the Convention shall form an integral part thereof and, unless otherwise expressly provided, a reference to the Convention constitutes at the same time a reference to any annexes thereto. Without prejudice to the provisions of Article 14, paragraph 2(b) and 7, such annexes shall be restricted to lists, forms and any other material of a descriptive nature that is of a scientific, technical, procedural or administrative character.

2. Annexes to the Convention shall be proposed and adopted in accordance with the procedure set forth in Article 15 paragraphs 2, 3 and 4.

3. An annex that has been adopted in accordance with paragraph 2 above shall enter into force for all Parties to the Convention six months after the date of the communication by the Depositary to such Parties of the adoption of the annex, except for those Parties that have notified the Depositary, in writing, within that period of their non-acceptance of the annex. The annex shall enter into force for Parties which withdraw their notification of non-acceptance on the ninetieth day after the date on which withdrawal of such notification has been received by the Depositary.

4. The proposal, adoption and entry into force of amendments to annexes to the Convention shall be subject to the same procedure as that for the proposal, adoption and entry into force of annexes to the Convention in accordance with paragraphs 2 and 3 above.

5. If the adoption of an annex or an amendment to an annex involves an amendment to the Convention, that annex or amendment to an annex shall not enter into force until such time as the amendment to the Convention enters into force.

ARTICLE 17

PROTOCOLS*

1. The Conference of the Parties may, at any ordinary session, adopt protocols to the Convention.

2. The text of any proposed protocol shall be communicated to the

Parties by the secretariat at least six months before such a session.

3. The requirements for the entry into force of any protocol shall be established by that instrument.

4. Only Parties to the Convention may be Parties to a protocol.

5. Decisions under any protocol shall be taken only by the Parties to the protocol concerned.

ARTICLE 18

RIGHT TO VOTE

1. Each Party to the Convention shall have one vote, except as provided for in paragraph 2 below.

2. Regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States that are Parties to the Convention. Such an organization shall not exercise its right to vote if any of its member States exercises its right, and vice versa.

ARTICLE 19

DEPOSITARY

The Secretary-General of the United Nations shall be the Depositary of the Convention and of protocols adopted in accordance with Article 17.

ARTICLE 20

SIGNATURE

This Convention shall be open for signature by States Members of the United Nations or of any of its specialized agencies or that are Parties to the Statute of the International Court of Justice and by regional economic integration organizations at Rio de Janeiro, during the United Nations Conference on Environment and Development, and thereafter at United Nations Headquarters in New York from 20 June 1992 to 19 June 1993.

ARTICLE 21

INTERIM ARRANGEMENTS

1. The secretariat functions referred to in Article 8 will be carried out on an interim basis by the secretariat established by the General Assembly of the United Nations in its resolution 45/212 of 21 December 1990, until the completion of the first session of the Conference of the Parties.

2. The head of the interim secretariat referred to in paragraph 1 above will cooperate closely with the Intergovernmental Panel on Climate Change to ensure that the Panel can respond to the need for objective scientific and technical advice. Other relevant scientific bodies could also be consulted.

3. The Global Environment Facility of the United Nations Development Programme, the United Nations Environment Programme and the International Bank for Reconstruction and Development shall be the international entity entrusted with the operation of the financial mechanism referred to in Article 11 on an interim basis. In this connection, the Global Environment Facility should be appropriately restructed and its membership made universal to enable it to fulfil the requirements of Article 11.

ARTICLE 22

RATIFICATION, ACCEPTANCE, APPROVAL OR ACCESSION

1. The Convention shall be subject to ratification, acceptance, approval or accession by States and by regional economic integration organizations. It shall be open for accession from the day after the date on which the Convention is closed for signature. Instruments of ratification, acceptance, approval or accession shall be deposited with the Depositary.

2. Any regional economic integration organization which becomes a Party to the Convention without any of its member States being a Party shall be bound by all the obligations under the Convention. In the case of such organizations, one or more of whose member States is a Party to the Convention, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under the Convention. In such cases, the organization and the member States shall not be entitled to exercise rights under the Convention concurrently.

3. In their instruments of ratification, acceptance, approval or accession, regional economic integration organizations shall declare the extent of their competence with respect to the matters governed by the Convention. These organizations shall also inform the Depositary, who shall in turn inform the Parties, of any substantial modification in the extent of their competence.

ARTICLE 23

ENTRY INTO FORCE

1. The Convention shall enter into force on the ninetieth day after the date of deposit of the fiftieth instrument of ratification, acceptance, approval or accession

2. For each State or regional economic integration organization that ratifies, accepts or approves the Convention or accedes thereto after the deposit of the fiftieth instrument of ratification, acceptance, approval or accession, the Convention shall enter into force on the ninetieth day after the date of deposit by such State or regional economic integration organization of its instrument of ratification, acceptance, approval or accession.

3. For the purposes of paragraphs 1 and 2 above, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by State members of the organization.

ARTICLE 24

RESERVATIONS

No reservations may be made to the Convention.

ARTICLE 25

WITHDRAWAL

1. At any time after three years from the date on which the Convention has entered into force for a Party, that Party may withdraw from the Convention by giving written notification to the Depositary.

2. Any such withdrawal shall take effect upon expiry of one year

from the date of receipt by the Depositary of the notification of withdrawal, or on such later date as may be specified in the notification of withdrawal.

3. Any Party that withdraws from the Convention shall be considered as also having withdrawn from any protocol to which it is a Party.

ARTICLE 26

AUTHENTIC TEXTS

The original of this Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

In witness where of the undersigned, being duly authorized with the Secretary-General of the United Nations.

Done at New York this ninth day of May one thousand nine hundred and ninety-two.

ANNEX I

Australia
Austria
Belarus[al]
Belgium
Bulgaria[al]
Canada
Czechoslovakia[al]
Denmark
European Community
Estonia[al]
Finland
France
Germany
Greece
Hungary[al]
Iceland
Ireland
Italy
Japan
Latvia[al]
Lithuania[al]
Luxembourg
Netherlands
New Zealand
Norway
Poland[al]
Portugal
Romania[al]
Russian Federation[al]
Spain
Sweden
Switzerland
Turkey
Ukraine[al]
United Kingdom of Great Britain and Northern Ireland
United States of America

ANNEX II

Australia
Austria
Belgium
Canada
Denmark
European Community
Finland
France
Germany
Greece
Iceland
Ireland
Italy
Japan
Luxembourg
Netherlands
New Zealand
Norway
Portugal
Spain
Sweden
Switzerland
Turkey
United Kingdom of Great Britain and Northern Ireland
United States of America

a/ Countries that are undergoing the process of transition to a market economy.

Annex II to the Report of the Committee

Resolution Adopted by the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change

INC/1992/1 *Interim arrangements*

The intergovernmental Negotiating Committee for a Framework Convention on Climate Change.

Having agreed upon the adopted the text of the United Nations Framework Convention on Climate Change.

Considering that preparations are required for an early and effective operation of the Convention once it has entered into force.

Further considering that, in the interim arrangements, involvement in the negotiations of all participants in the Committee is essential.

Recalling General Assembly resolutions 45/212 of 21 December 1990 and 46/169 of 19 December 1991.

1. Calls upon all States and regional economic integration organizations entitled to do so to sign the Convention during the United Nations Conference on Environment and Development in Rio de Janeiro or at the earliest subsequent opportunity and thereafter to ratify, accept, approve

or accede to the Convention;

2. Requests the Secretary-General to make the necessary arrangements for convening a session of the Committee, in accordance with paragraph 4 of General Assembly resolution 46/169, to prepare for the first session of the Conference of the Parties as specified in the Convention;

3. Requests further the Secretary-General of make recommendations to the General Assembly at its forty-seventh session regarding arrangements for further sessions of the Committee until the entry into force of the Convention;

4. Invites the Secretary-General to include in his report to the General Assembly, as required in paragraphs 4 and 9 resolution 46/169, proposals that would enable the secretariat established under resolution 45/212 to continue its activities until the designation of the secretariat of the Convention by the Conference of the Parties;

5. Appeals to Governments and organizations to make voluntary contributions to the extrabudgetary funds established under General Assembly resolution 45/212 in order to contribute to the costs of the interim arrangements, and to ensure full and effective participation of developing countries, in particular the least developed countries and small island developing countries, as well as developing countries stricken by drought desertification, in all the sessions of the Committee;

6. Invites States and regional economic integration organizations entitled to sign the Convention to communicate as soon as feasible to the head of the secretariat information regarding measures consistent with the provisions of the Convention pending its entry into force.

FOOTNOTE

1. This includes policies and measures adopted by regional economic integration organizations.

DOCUMENT — 11

Convention on Biological Diversity

[5 June 1992]

PREAMBLE

The Contracting Parties

Conscious of the intrinsic value of biological diversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components.

Conscious also of the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere.

Affirming that the conservation of biological diversity is a common concern of humankind.

Reaffirming that State have sovereign rights over their own biological resources.

Reaffirming also that States are responsible for conserving their biological diversity and for using their biological resources in a sustainable manner.

Concerned that biological diversity is being significantly reduced by certain human activities.

Aware of the general lack of information and knowledge regarding biological diversity and of the urgent need to develop scientific, technical and institutional capacities to prove the basic understanding upon which to plan and implement appropriate measures.

Noting that it is vital to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at source.

Noting also that where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainly should not be used as a reason for postponing measures to avoid minimize such a threat.

Noting further that the fundamental requirement for the conservation of biological diversity is the in-situ conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings.

Noting further that *ex-situ* measures, preferably in the country of origin, also have an important role to play.

evolutionary process has been influenced by humans to meet their needs.

"*Ecosystem*" means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

"*Ex-situ conservation*" means the conservation of components of biological diversity outside their natural habitats.

"*General material*" means any material of plant, animal, microbial or other origin containing functional units of heredity.

"*Genetic resources*" means genetic material of actual or potential value.

"*Habitat*" means the place or type of site where an organism or population naturally occurs.

"*In-situ conditions*" means conditions where genetic resources exist within ecosystems and natural habitats, and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

"*In-situ conservation*" means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.

"*Protected area*" means a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives.

"*Regional economic integration organization*" means an organization constituted by sovereign States of a given region, to which its member States have transferred competence in respect of matters governed by this Convention and which has been duly authorized, in accordance with its internal procedures, to sign, ratify, accept, approve or accede to it.

"*Sustainable use*" means the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

"*Technology*" includes biotechnology.

ARTICLE 3

PRINCIPLE

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

ARTICLE 4

JURISDICTIONAL SCOPE

Subject to the rights of other States, and except as otherwise expressly provided in this Convention, the provisions of this Convention apply, in relation to each Contracting Party:

(a) In the case of components of biological diversity, in areas within the limits of its national jurisdiction; and

(b) In the case of processes and activities, regardless of where their effects occur, carried out under its jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction.

ARTICLE 5

COOPERATION

Each Contracting Party shall, as far as possible and as appropriate, cooperate with other Contracting Parties, directly or, where appropriate, through competent international organizations, in respect of areas beyond national jurisdiction and on other matters of mutual interest, for the conservation and sustainable use of biological diversity.

ARTICLE 6

GENERAL MEASURES FOR CONSERVATION AND SUSTAINABLE USE

Each Contracting Party shall, in accordance with its particular conditions and capabilities:

(a) Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned; and

(b) Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

ARTICLE 7

IDENTIFICATION AND MONITORING

Each Contracting Party shall, as far as possible and as appropriate, in particular for the purposes of Articles 8 to 10:

(a) Identify components of biological diversity important for its conservation and sustainable use having regard to the indicative list of categories set down in Annex I;

(b) Monitor, through sampling and other techniques, the components of biological diversity identified pursuant to subparagraph (a) above, paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use;

(c) Identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques; and

(d) Maintain and organize, by any mechanism data, derived from identification and monitoring activities pursuant to subparagraphs (a), (b) and (c) above.

ARTICLE 8

IN-SITU CONSERVATION

Each Contracting Party shall, as far as possible and as appropriate:

(a) Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity;

(b) Develop, where necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity:

(c) Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use;

(d) Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings;

(e) Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas;

(f) Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, *inter alia*, through the development and implementation of plans or other management strategies;

(g) Establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking also into account the risks to human health;

(h) Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species;

(i) Endeavour to provide the conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable use of its components;

(j) Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices;

(k) Develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations;

(l) Where a significant adverse effect on biological diversity has been determined pursuant to Article 7, regulate or manage the relevant processes and categories of activities; and

(m) Cooperate in providing financial and other support for *in-situ* conservation outlined in subparagraphs (a) to (1) above, particularly to developing countries.

ARTICLE 9

EX-SITU CONSERVATION

Each Contracting Party shall, as far as possible and as appropriate and predominantly for the purpose of complementing *in-situ* measures:

(a) Adopt measures for the *ex-situ* conservation of components of biological diversity, preferably in the country of origin of such components.

(b) Establish and maintain facilities for *ex-situ* conservation of and research on plants, animals and micro-organisms, preferably in the country of origin of genetic resources;

(c) Adopt measures for the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions;

(d) Regulate and manage collection of biological resources from natural habitats for ex-situ conservation purposes so as not to threaten ecosystems and *in-situ* populations of species, except where special temporary *ex-situ* measures are required under subparagraph (c) above; and

(e) Cooperate in providing financial and other support for *ex-situ* conservation outlined in subparagraphs (a) to (d) above and in the establishment and maintenance of *ex-situ* conservation facilities in developing countries.

ARTICLE 10

SUSTAINABLE USE OF COMPONENTS OF BIOLOGICAL DIVERSITY

Each Contracting Party shall, as far as possible and as appropriate:

(a) Integrate consideration of the conservation and sustainable use of biological resources into national decision-making;

(b) Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity;

(c) Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements;

(d) Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced; and

(e) Encourage cooperation between its governmental authorities and its private sector in developing methods for sustainable use of biological resources.

ARTICLE 11

INCENTIVE MEASURES

Each Contracting Party shall, as far as possible and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity.

ARTICLE 12

RESEARCH AND TRAINING

The Contracting Parties, taking into account the special needs of developing countries, shall:

(a) Establish and maintain programmes for scientific and technical education and training in measures for the identification, conservation and sustainable use of biological diversity and its components and provide support for such education and training for the specific needs of developing countries;

(b) Promote and encourage research which contributes to the conservation and sustainable use of biological diversity, particularly in developing countries, inter alia, in accordance with decisions of the Conference of the Parties taken in consequence of recommendations of the Subsidiary Body on Scientific, Technical and Technological Advice; and

(c) In keeping with the provisions of Article 16, 18 and 20, promote and cooperate in the use of scientific advances in biological diversity research in developing methods for conservation and sustainable use of biological resources.

ARTICLE 13

PUBLIC EDUCATION AND AWARENESS

The Contracting Parties shall:

(a) Promote and encourage understanding of the importance of, and the measures required for, the conservation of biological diversity, as well as its propagation through media, and the inclusion of these topics in educational programmes; and

(b) Cooperate, as appropriate, with other States and international organizations in developing educational and public awareness programmes, with respect to conservation and sustainable use of biological diversity.

ARTICLE 14

IMPACT ASSESSMENT AND MINIMIZING ADVERSE IMPACTS

1. Each Contracting Party, as far as possible and as appropriate, shall:

(a) Introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate, allow for public participation in such procedures;

(b) Introduce appropriate arrangements to ensure that the environmental consequences of its programmes and policies that are likely to have significant adverse impacts on biological diversity are duly taken into account;

(c) Promote, on the basis of reciprocity, notification, exchange of information and consultation on activities under their jurisdiction or control which are likely to significantly affect adversely the biological diversity of other States or areas beyond the limits of national jurisdiction, by encouraging the conclusion of bilateral, regional or multilateral arrangements, as appropriate;

(d) In the case of imminent or grave danger or damage, originating under its jurisdiction or control, to biological diversity within the area under jurisdiction of other States or in areas beyond the limits of national jurisdiction, notify immediately the potentially affected States of such danger or damage, as well as initiate action to prevent or minimize such danger or damage; and

(e) Promote national arrangements for emergency responses to activities or events, whether caused naturally or otherwise, which present a grave and imminent danger to biological diversity and encourage international cooperation to supplement such national efforts and, where appropriate and agreed by the States or regional economic integration organizations concerned, to establish joint contingency plans.

2. The Conference of the Parties shall examine, on the basis of studies to be carried out, the issue of liability and redress, including restoration and compensation, for damage to biological diversity, except where such liability is a purely internal matter.

ARTICLE 15

ACCESS TO GENETIC RESOURCES

1. Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.

2. Each Contracting Party shall endeavour to create conditions to facilities access to genetic resources for environmentally sound uses by other Contracting Parties and not to impose restrictions that run counter to the objectives of this Convention.

3. For the purpose of this Convention, the genetic resources being provided by a Contracting Party, as referred to in this Article and Articles 16 and 19, are only those that are provided by Contracting Parties that are countries of origin of such resources or by the Parties that have acquired the genetic resources in accordance with this Convention.

4. Access, where granted, shall be on mutually agreed terms and subject to the provisions of this Article.

5. Access to genetic resources shall be subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party.

6. Each Contracting Party shall endeavour to develop and carry out scientific research based on genetic resources provided by other Contracting Parties with the full participation of, and where possible in, such Contracting Parties.

7. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, and in accordance with Articles 16 and 19 and, where necessary, through the financial mechanism established by Articles 20 and 21 with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources. Such sharing shall be upon mutually

agreed terms.

ARTICLE 16

ACCESS TO AND TRANSFER OF TECHNOLOGY

1. Each Contracting Party, recognizing that technology includes biotechnology, and that both access to and transfer of technology among Contracting Parties are essential elements for the attainment of the objectives of this Convention, undertakes subject to the provisions of this Article to provide and/or facilitate access for the transfer to other Contracting Parties of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment.

2. Access to and transfer of technology referred to in paragraph 1 above to developing countries shall be provided and/or facilitated under fair and most favourable terms, including on concessional and preferential terms where mutually agreed, and, where necessary, in accordance with the financial mechanism established by Articles 20 and 21. In the case of technology subject to patents and other intellectual property rights, such access and transfer shall be provided on terms which recognize and are consistent with the adequate and effective protection of intellectual property rights. The application of this paragraph shall be consistent with paragraphs 3, 4 and 5 below.

3. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that Contracting Parties, in particular those that are developing countries, which provide genetic resources are provided access to and transfer of technology which makes use of those resources, on mutually agreed terms, including technology protected by patents and other intellectual property rights, where necessary, through the provisions of Articles 20 and 21 and in accordance with international law and consistent with paragraphs 4 and 5 below.

4. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that the private sector facilitates access to, joint development and transfer of technology referred to in paragraph 1 above for the benefit of both governmental institutions and the private sector of developing countries and in this regard shall abide by the obligations included in paragraphs 1, 2 and 3 above.

5. The Contracting Parties, recognizing that patents and other intel-

lectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.

ARTICLE 17

EXCHANGE OF INFORMATION

1. The Contracting Parties shall facilitate the exchange of information, from all publicly available sources, relevant to the conservation and sustainable use of biological diversity, taking into account the special needs of developing countries.

2. Such exchange of information shall include exchange of results of technical, scientific and socio-economic research, as well as information on training and surveying programmes, specialized knowledge, indigenous and traditional knowledge as such and in combination with the technologies referred to in Article 16, paragraph 1. It shall also, where feasible, include repatriation of information.

ARTICLE 18

TECHNICAL AND SCIENTIFIC COOPERATION

1. The Contracting Parties shall promote international technical and scientific cooperation in the field of conservation and sustainable use of biological diversity, where necessary, through the appropriate international and national institutions.

2. Each Contracting Party shall promote technical and scientific cooperation with other Contracting Parties, in particular developing countries, in implementing this Convention, *inter alia*, through the development and implementation of national policies. In promoting such cooperation, special attention should be given to the development and strengthening of national capabilities, by means of human resources development and institution building.

3. The Conference of the Parties, at its first meeting, shall determine how to establish a clearing-house mechanism to promote and facilitate technical and scientific cooperation.

4. The Contracting Parties shall, in accordance with national legislation and policies, encourage and develop methods of cooperation for the

cial situation of least developed countries in their actions with regard to funding and transfer of technology.

6. The Contracting Parties shall also take into consideration the special conditions resulting from the dependence on, distribution and location of, biological diversity within developing country Parties, in particular small island States.

7. Consideration shall also be given to the special situation of developing countries, including those that are most environmentally vulnerable, such as those with arid and semi-arid zones, coastal and mountainous areas.

ARTICLE 21

FINANCIAL MECHANISM

1. There shall be a mechanism for the provision of financial resources to developing country Parties for purposes of this Convention on a grant or concessional basis the essential elements of which are described in this Article. The mechanism shall function under the authority and guidance of, and be accountable to, the Conference of the Parties for purposes of this Convention. The operations of the mechanism shall be carried out by such institutional structure as may be decided upon by the Conference of the Parties at its first meeting. For purposes of this Convention, the Conference of the Parties shall determine the policy, strategy, programme priorities and eligibility criteria relating to the access to the utilization of such resources. The contributions shall be such as to take into account the need predictability, adequacy and timely flow of funds referred to in Articles 20 in accordance with the amount of resources needed to be decided periodically by the Conference of the Parties and the importance of burden-sharing among the contributing Parties included in the list referred to in Article 20, paragraph 2. Voluntary contributions may also be made by the developed country Parties and by other countries and sources. The mechanism shall operate within a democratic and transparent system of goverance.

2. Pursuant to the objectives of this Convention, the Conference of the Parties shall its first meeting determine the policy, strategy and programme priorities, as well as detailed criteria and guidelines for eligibility for access to and utilization of the financial resources including monitoring and evaluation on a regular basis of such utilization. The Conference of the Parties shall decide on the arrangements to give effect to

paragraph 1 above after consultation with the institutional structure entrusted with the operation of the financial mechanism.

3. The Conference of the Parties shall review the effectiveness of the mechanism established under this Article, including the criteria and guidelines referred to in paragraph 2 above, not less than two years after the entry into force of this Convention and thereafter on a regular basis. Based on such review, it shall take appropriate action to improve the effectiveness of the mechanism if necessary.

4. The Contracting Parties shall consider strengthening existing financial institutions to provide financial resources for the conservation and sustainable use of biological diversity.

ARTICLE 22

RELATIONSHIP WITH OTHER INTERNATIONAL CONVENTIONS

1. The provisions of this Convention shall not affect the rights and obligations of any Contracting Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity.

2. Contracting Parties shall implement this Convention with respect to the marine environment consistently with the rights and obligations of States under the law of the sea.

ARTICLE 23

CONFERENCE OF THE PARTIES

1. A Conference of the Parties is hereby established. The first meeting of the Conference of the Parties shall be convened by the Executive Director of the United Nations Environment Programme not later than one year after the entry into force of this Convention. Thereafter, ordinary meetings of the Conference of the Parties shall be held at regular intervals to be determined by the Conference at its first meeting.

2. Extraordinary meetings of the Conference of the Parties shall be held at such other times as may be deemed necessary by the Conference, or at the written request of any Party, provided that, within six months of the request being communicated to them by the Secretariat, it is supported by at least one third of the Parties.

3. The Conference of the Parties shall by consensus agree upon the adopt rules of procedure for itself and for any subsidiary body it may establish, as well as financial rules governing the funding of the Secretariat. At each ordinary meeting, it shall adopt a budget for the financial period until the next ordinary meeting.

4. The Conference of the Parties shall keep under review the implementation of this Convention, and, for this purpose, shall:

(a) Establish the form and the intervals for transmitting the information to be submitted in accordance with Article 26 and consider such information as well as reports submitted by any subsidiary body;
(b) Review scientific, technical and technological advice on biological diversity provided in accordance with Article 25;
(c) Consider and adopt, as required, protocols in accordance with Article 28;
(d) Consider and adopt, as required, in accordance with Articles 29 and 30, amendments to this Convention and its annexes;
(e) Consider amendments to any protocol, as well as to any annexes thereto, and, if so decided, recommend their adoption to the parties to the protocol concerned;
(f) Consider and adopt, as required, in accordance with Article 30, additional annexes to this Convention;
(g) Establish such subsidiary particularly to provide scientific and technical advice, as are deemed necessary for the implementation of this convention;
(h) Contact, through the Secretariat, the executive bodies of conventions dealing with matters covered by this Convention with a view to establishing appropriate forms of cooperation with them; and
(i) Consider and undertake any additional action that may be required for the achievement of the purposes of this Convention in the light of experience gained in its operation.

5. The United Nations, its specialized agencies and the International Atomic Energy Agency, as well as any State not Party to this Convention, may be represented as observers at meetings of the Conference of the Parties. Any other body or agency, whether governmental or non-governmental, qualified in fields relating to conservation and sustainable use of biological diversity, which has informed the Secretariat of its wish to be represented as an observer at a meeting of the Conference of the Parties, may be admitted unless at least one third of the Parties present object. The admission and participation of observers shall be subject to

the rules of procedure adopted by the Conference of the Parties.

ARTICLE 24

SECRETARIAT

1. A secretariat is hereby established. Its functions shall be:

(a) To arrange for and service meetings of the Conference of the Parties provided for in Article 23;

(b) To perform the functions assigned to it by any protocol;

(c) To prepare reports on the execution of its functions under this Convention and present them to the Conference of the Parties;

(d) To coordinate with other relevant international bodies and, in particular to enter into such administrative and contractual arrangements as may be required for the effective discharge of its functions; and

(e) To perform such other functions as may be determined by the Conference of the Parties.

2. At its first ordinary meeting, the Conference of the Parties shall designate the secretariat from amongst those existing competent international organizations which have signified their willingness to carry out the secretariat functions under this Convention.

ARTICLE 25

SUBSIDIARY BODY ON SCIENTIFIC, TECHNICAL AND TECHNOLOGICAL ADVICE

1. A subsidiary body for the provision of scientific, technical and technological advice is hereby established to provide the Conference of the Parties and, as appropriate, its other subsidiary bodies with timely advice relating to the implementation of this Convention. This body shall be open to participation by all Parties and shall be multidisciplinary. It shall comprise government representatives competent in the relevant field of expertise. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the authority of and in accordance with guidelines laid down by the Conference of the Parties, and upon its request, this body shall:

(a) Provide scientific and technical assessments of the status of biological diversity;

(b) Prepare scientific and technical assessments of the effects of types of measures taken in accordance with the provisions of this Convention;

(c) Identify innovative, efficient and state-of-the-art technologies and know-how relating to the conservation and sustainable use of biological diversity and advice on the ways and means of promoting development and/or transferring such technologies;

(d) Provide advice on scientific programmes and international cooperation in research and development related to conservation and sustainable use of biological diversity; and

(e) Respond to scientific, technical, technological and methodological questions that the Conference of the Parties and its subsidiary bodies may put to the body.

3. The functions, terms of reference, organization and operation of this body may be further elaborated by the Conference of the Parties.

ARTICLE 26

REPORTS

Each Contracting Party shall, at intervals to be determined by the Conference of the Parties, present to the Conference of the Parties, reports on measures which it has taken for the implementation of the provisions of the Convention and their effectiveness in meeting the objectives of this Convention.

ARTICLE 27

SETTLEMENT OF DISPUTES

1. In the event of a dispute between Contracting Parties concerning the interpretation or application of this Convention, the parties concerned shall seek solution by negotiation.

2. If the parties concerned cannot reach agreement by negotiation, they may jointly seek the good offices of, or request mediation by, a third party.

3. When ratifying, accepting, approving or acceding to this Convention, or at any time thereafter, a State or regional economic integration

organization may declare in writing to the Depositary that for a dispute not resolved in accordance with paragraph 1 or paragraph 2 above, it accepts one or both of the following means of dispute settlement as compulsory:

(a) Arbitration in accordance with the procedure laid down in Part I of Annex II;

(b) Submission of the dispute to the International Court of Justice.

4. If the parties to the dispute have not, in accordance with paragraph 3 above, accepted the same or any procedure, the dispute shall be submitted to conciliation in accordance with Part 2 of Annex II unless the parties otherwise agree.

5. The provisions of this Article shall apply with respect to any protocol except as otherwise provided in the protocol concerned.

ARTICLE 28

ADOPTION OF PROTOCOLS

1. The Contracting Parties shall cooperate in the formulation and adoption of protocols to this Convention.

2. Protocols shall be adopted at a meeting of the Conference of the Parties.

3. The text of any proposed protocol shall be communicated to the Contracting Parties by the Secretariat at least six months before such a meeting.

ARTICLE 29

AMENDMENT OF THE CONVENTION OR PROTOCOLS

1. Amendments to this Convention may be proposed by any Contracting Party. Amendments to any protocol may be proposed by any Party to that protocol.

2. Amendments to this Convention shall be adopted at a meeting of the Conference of the Parties. Amendments to any protocol shall be adopted at a meeting of the Parties to the Protocol in question. The text of any proposed amendment to this Convention or to any protocol, except as may otherwise be provided in such protocol, shall be communicated to the Parties to the instrument in question by the secretariat at least six months before the meeting at which it is proposed for adoption. The secretariat shall also communicate proposed amendments to the

signatories to this Convention for information.

3. The Parties shall make every effort to reach agreement on any proposed amendment to this Convention or to any protocol by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a two-third majority vote of the Parties to the instrument in question present and voting at the meeting, and shall be submitted by the Depositary to all Parties for ratification, acceptance or approval.

4. Ratification, acceptance or approval of amendments shall be notified to the Depositary in writing. Amendments adopted in accordance with paragraph 3 above shall enter into force among Parties having accepted them on the ninetieth day after the deposit of instruments of ratification, acceptance or approval by at least two thirds of the Contracting Parties to this Convention or of the Parties to the protocol concerned, except as may otherwise be provided in such protocol. Thereafter the amendments shall enter into force for any other Party on the ninetieth day after Party deposits its instrument of ratification, acceptance or approval of the amendments.

5. For the purposes of this Article, "Parties present and voting" means Parties present and casting an affirmative or negative vote.

ARTICLE 30

ADOPTION AND AMENDMENT OF ANNEXES

1. The annexes to this Convention or to any protocol shall form an integral part of the Convention or of such protocol, as the case may be, and, unless expressly provided otherwise, a reference to this Convention or its protocols constitute at the same time a reference to any annexes thereto. Such annexes shall be restricted to procedural, scientific, technical and administrative matters.

2. Except as may be otherwise provided in any protocol with respect to its annexes, the following procedure shall apply to the protocol, adoption and entry into force of additional annexes to this convention or of annexes to any protocol:

(a) Annexes to this Convention or to any protocol shall be proposed and adopted according to the procedure laid down in Article 29;

(b) Any Party that is unable to approve an additional annex to this Convention or an annex to any protocol to which it is Party shall so notify the Depositary, in writing, within one year from the date of the communication of the adoption by the Depositary. The Depositary shall without delay notify all Parties of any such notification received. A annexes shall thereupon enter into force for that Party subject to subparagraph (c) below;

(c) On the expiry of one year from the date of the communication of the adoption by the Depositary, the annex shall enter into force for all Parties to this Convention or to any protocol concerned which have not submitted a notification in accordance with the provisions of subparagraph (b) above.

3. The proposal, adoption and entry into force of amendments to annexes to this Convention or to any protocol shall be subject to the same procedure as for the proposal, adoption and entry into force of annexes to the Convention or annexes to any protocol.

4. If an additional annex or an amendment to an annex is related to an amendment to this Convention or to any protocol, the additional annex or amendment shall not enter into force until such time as the amendment to the Convention or to the protocol concerned enters into force.

ARTICLE 31

RIGHT TO VOTE

1. Except as provided for in paragraph 2 below, each Contracting Party to this Convention or to any protocol shall have one vote.

2. Regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States which are Contracting Parties to this Convention or the relevant protocol. Such organizations shall not exercise their right to vote if their member States exercise theirs, and vice versa.

ARTICLE 32

RELATIONSHIP BETWEEN THIS CONVENTION AND ITS PROTOCOLS

1. A State or a regional economic integration organization may not become a Party to a protocol unless it is, or becomes at the same time, a Contracting Party to this Convention.

2. Decisions under any protocol shall be taken only by the Parties to the protocol concerned. Any Contracting Party that has not ratified, accepted or approved a protocol may participate as an observer in any meeting of the parties to that protocol.

ARTICLE 33

SIGNATURE

This Convention shall be open for signature at Rio de Janeiro by all States and any regional economic integration organization from 5 June 1992 until 14 June 1992, and at the United Nations Headquarters in New York from 15 June 1992 to 4 June 1993.

ARTICLE 34

RATIFICATION ACCEPTANCE OR APPROVAL

This Convention and any protocol shall be subject to ratification, acceptance or approval by States and by regional economic integration organizations. Instruments of ratification, acceptance or approval shall be deposited with the Depositary.

2. Any organization referred to in paragraph 1 above which becomes a Contracting Party to this Convention or any protocol without any of its member States being a Contracting Party shall be bound by all the obligations under the Convention or the protocol, as the case may be. In the case of such organizations, one or more of whose member States is a Contracting Party to this Convention or relevant protocol, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under the Convention or protocol, as the case may be. In such cases, the organization and the member States shall not be entitled to exercise rights under the Convention or relevant protocol concurrently.

3. In their instruments of ratification, acceptance or approval, the organizations referred to in paragraph 1 above shall declare the extent of their competence with respect to the matters governed by the Convention or the relevant protocol. These organizations shall also inform the Depositary of any relevant modification in the extent of their competence.

ARTICLE 35

ACCESSION

1. This Convention and any protocol shall be open for accession by States and by regional economic integration organizations from the date on which the Convention or the protocol concerned is closed for signature. The instruments of accession shall be deposited with the Depositary.

2. In their instruments of accession, the organizations referred to in paragraph 1 above shall declare the extent of their competence with respect to the matters governed by the Convention or the relevant protocol. These organizations shall also inform the Depositary of any relevant modification in the extent of their competence.

3. The provisions of Article 34, paragraph 2, shall apply to regional economic integration organizations which accede to this Convention or any protocol.

ARTICLE 36

ENTRY INTO FORCE

1. This Convention shall enter into force on the ninetieth day after the date of deposit of the thirtieth instrument of ratification, acceptance, approval or accession.

2. Any protocol shall enter into force on the ninetieth day after the date of deposit of the number of instruments of ratification, acceptance, approval or accession, specified in that protocol, has been deposited.

3. For each Contracting Party which ratifies, accepts or approves this Convention or accedes thereto after the deposit of the thirtieth instrument of ratification, acceptance, approval or accession, it shall enter into force on the ninetieth day after the date of deposit by such Contracting Party of its instrument of ratification, acceptance, approval or accession.

4. Any protocol, except as otherwise provided in such protocol, shall enter into force for a Contracting Party that ratifies, accepts or approves that protocol or accedes thereto after its entry into force pursuant to paragraph 2 above, on the ninetieth day after the date on which that Contracting Party deposits its instrument of ratification, acceptance, approval or accession, or on the date on which this Convention enters into force for that Contracting Party, whichever shall be the later.

5. For the purposes of paragraphs 1 and 2 above, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by member States of such organization.

ARTICLE 37

RESERVATION

No reservations may be made to this Convention.

ARTICLE 38

WITHDRAWALS

1. At any time after two years from the date on which this Convention has entered into force for a Contracting Party, that Contracting Party may withdraw from the Convention by giving written notification to the Depositary.

2. Any such withdrawal shall take place upon expiry of one year after the date of its receipt by the Depositary, or on such later date as may be specified in the notification of the withdrawal.

3. Any Contracting Party which withdraws from this Convention shall be considered as also having withdrawn from any protocol to which it is party.

ARTICLE 39

FINANCIAL INTERIM ARRANGEMENTS

Provided that it has been fully restructured in accordance with the requirements or Article 21, the Global Environment Facility of the United Nations Development Programme, the United Nations Environment Programme and the International Bank for Reconstruction and Development shall be the institutional structure referred to in Article 21 on an interim basis, for the period between the entry into force of this Convention and the first meeting of the Conference of the Parties or until the Conference of the Parties decides which institutional structure will be designated in accordance with Article 21.

ARTICLE 40

SECRETARIAT INTERIM ARRANGEMENTS

The secretariat to be provided by the Executive Director of the United Nations Environment Programme shall be the secretariat referred to in Article 24, paragraph 2, on an interim basis for the period between the entry into force of this Convention and the first meeting of the Conference of the Parties.

ARTICLE 41

DEPOSITARY

The Secretary-General of the United Nations shall assume the functions of Depositary of this Convention and any protocols.

ARTICLE 42

AUTHENTIC TEXTS

The original of this Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

In witness whereof the undersigned, being duly authorized to that effect, have signed this Convention.

Done at Rio de Janeiro on this fifth day of June, one thousand nine hundred and ninety-two.

Annex I

IDENTIFICATION AND MONITORING

1. Ecosystems and habitats: containing high diversity, large numbers of endemic or threatened species, or wilderness; required by migratory species; of social, economic, cultural or scientific importance; or, which are representative, unique or associated with key evolutionary or other biological processes;

2. Species and communities which are: threatened; wild relatives of domesticated or cultivated species; of medicinal, agricultural or other eco-

nomic value; or social, scientific or cultural importance; or importance for research into the conservation and sustainable use of biological diversity, such as indicator species; and

3. Described genomes and genes of social, scientific or economic importance.

Annex II

Part 1

ABRITRATION

ARTICLE 1

The claimant party shall notify the secretariat that the parties are referring a dispute to arbitration pursuant to Article 27. The notification shall state the subject-matter of arbitration and include, in particular, the articles of the Convention or the protocol, the interpretation or application of which are at issue. If the parties do not agree on the subject matter of the dispute before the President of the tribunal is designated, the arbitral tribunal shall determine the subject matter. The secretariat shall forward the information thus received to all Contracting Parties to this Convention or to the protocol concerned.

ARTICLE 2

1. In disputes between two parties, the arbitral tribunal shall consist of three members. Each of the parties to the dispute shall appoint an arbitrator and the two arbitrators so appointed shall designate by common agreement the third arbitrator who shall be the President of the tribunal. The latter shall not be a national of one of the parties to the dispute, nor have his or her usual place of residence in the territory of one of these parties, nor be employed by any of them, nor have dealt with the case in any other capacity.

2. In disputes between more than two parties, parties in the same interest shall appoint one arbitrator jointly by agreement.

3. Any vacancy shall be filled in the manner prescribed for the initial appointment.

ARTICLE 3

1. If the President of the arbitral tribunal has not been designated within two months of the appointment of the second arbitrator, the Secretary-General of the United Nations shall, at the request of a party, designate the President within a further two-month period.

2. If one of the parties to the dispute does not appoint an arbitrator within two months of receipt of the request, the other party may inform the Secretary-General who shall make the designation within a further two-month period.

ARTICLE 4

The arbitral tribunal shall render its decisions in accordance with the provisions of this Convention, any protocols concerned, and international law.

ARTICLE 5

Unless the parties to the dispute otherwise agree, the arbitral tribunal shall determine its own rules of procedure.

ARTICLE 6

The arbitral tribunal may, at the request of one of the parties, recommend essential interim measures of protection.

ARTICLE 7

The parties to the dispute shall facilitate the work of the arbitral tribunal and, in particular, using all means at their disposal, shall:

(a) Provide it will all relevant documents, information and facilities; and

(b) Enable it, when necessary, to call witnesses or experts and receive their evidence.

ARTICLE 8

The parties and the arbitrators are under an obligation to protect the confidentiality of any information they receive in confidence during the proceedings of the arbitral tribunal.

ARTICLE 9

Unless the arbitral tribunal determines otherwise because of the particular circumstances of the case, the costs of the tribunal shall be borne by the parties to the dispute in equal shares. The tribunal shall keep a record of all its costs, and shall furnish a final statement thereof to the parties.

ARTICLE 10

Any Contracting Party that has an interest of a legal nature in the subject-matter of the dispute which may be affected by the decision in the case, may intervene in the proceedings with the consent of the tribunal.

ARTICLE 11

The tribunal may hear and determine counterclaims arising directly out of the subject-matter of the dispute.

ARTICLE 12

Decisions both on procedure and substance of the arbitral tribunal shall be taken by a majority vote of its members.

ARTICLE 13

If one of the parties to the dispute does not appear before the arbitral tribunal or fails to defend its case, the other party may request the tribunal to continue the proceedings and to make its award. Absence of a party or a failure of a party to defend its case shall not constitute a bar to the proceedings. Before rendering its final decision, the arbitral tribunal must satisfy itself that the claim is well founded in fact and law.

ARTICLE 14

The tribunal shall render its final decision within five months of the date on which it is fully constituted unless it finds it necessary to extend the time-limit for a period which should not exceed five more months.

ARTICLE 15

The final decision of the arbitral tribunal shall be confined to the subject-matter of the dispute and shall state the reasons on which it is based. It shall contain the names of the members who have participated and the date of the final decision. Any member of the tribunal may attach a separate or dissenting opinion to the final decision.

ARTICLE 16

The award shall be binding on the parties to the dispute. It shall be without appeal unless the parties to the dispute have agreed in advance to an appellate procedure.

ARTICLE 17

Any controversy which may arise between the parties to the dispute as regard the interpretation or manner of implementation of the final decisions may be submitted by either party for decision to the arbitral tribunal which rendered it.

Part 2

CONCILIATION

ARTICLE 1

A conciliation commission shall be created upon the request of one of the parties to the dispute. The commission shall, unless the parties otherwise agree, be composed of five members, two appointed by each Party concerned and a President chosen jointly by those members.

ARTICLE 2

In disputes between more than two parties, parties in the same interest shall appoint their members of the commission jointly by agreement. Where two or more parties have separate interests or there is a disagreement as to whether they are of the same interest, they shall appoint their members separately.

ARTICLE 3

If any appointments by the parties are not made within two months of the date of the request to creates a conciliation commission, the Secretary-General of the United Nations shall, if asked to do so by the party that made the request, make those appointments within a further two-month period.

ARTICLE 4

If a President of the conciliation commission has not been chosen within two months of the last of the members of the commission being appointed, the Secretary-General of the United Nations shall, if asked to do so by a party, designate a President within a further two-month period.

ARTICLE 5

The conciliation commission shall take its decisions by majority vote of its members. It shall, unless the parties to the dispute otherwise agree, determine its own procedure. It shall render a proposal for resolution of the dispute, which the parties shall consider in good faith.

ARTICLE 6

A disagreement as to whether the conciliation commission has competence decided by the commission.

DOCUMENT — 12

Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests

PREAMBLE

(a) The subject of forests is related to the entire range of environmental and development issues and opportunities, including the right to socio-economic development on a sustainable basis.

(b) The guiding objective of these principles is to contribute to the management, conservation and sustainable development of forests and to provide for their multiple and complementary functions and uses.

(c) Forestry issues and opportunities should be examined in a holistic and balanced manner within the overall context of environment and development, taking into consideration the multiple functions and uses of forests, including traditional uses, and the likely economic and social stress when these uses are constrained or restricted, as well as the potential for development that sustainable forest management can offer.

(d) These principles reflect a first global consensus on forests. In committing themselves to the prompt implementation of these principles, countries also decide to keep them under assessment for their adequacy with regard to further international cooperation on forest issues.

(e) These principles should apply to all types of forests, both natural and planted, in all geographic regions and climatic zones, including austral, boreal, subtemperate, temperate, subtropical and tropical.

(f) All types of forests embody complex and unique ecological processes which are the basis for their present and potential capacity to provide resources to satisfy human needs as well as environmental values and as such their sound management and conservation is of concern to the Governments of the countries to which they belong and are of value to local communities and to the environment as a whole.

(g) Forests are essential to economic development and the maintenance of all forms of life.

(h) Recognizing that the responsibility for forest management, conservation and sustainable development is in many States allocated among federal/national, state/provincial and local levels of government, each State, in accordance with its constitution and/or national legislation should pursue these principles at the appropriate level of government.

PRINCIPLES/ELEMENTS

1a. States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies and have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

b. The agreed full incremental cost of achieving benefits associated with forest conservation and sustainable development requires increased international cooperation and should be equitably shared by the international community.

2a. States have the sovereign and inalienable right to utilize, manage and develop their forests in accordance with their development needs and level of socio-economic development and on the basis of national policies consistent with sustainable development and legislation, including the conversion of such areas for other uses within the overall socio-economic development plan and based on rational land-use policies.

b. Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological cultural and spiritual human needs of present and future generations. These needs are for forests products and services, such as wood and wood products, water, food, fodder, medicine, fuel, shelter, employment, recreation, habitats for wildlife, landscape diversity, carbon sinks and reservoirs, and for other forest products. Appropriate measures should be taken to protect forests against harmful effects of pollution, including air-borne pollution, fires, pests and diseases in order to maintain their full multiple value.

c. The provision of timely, reliable and accurate information on forests and forest ecosystems is essential for public understanding and informed decision-making and should be ensured.

d. Governments should promote and provide opportunities for the participation of interested parties, including local communities and indigenous people, industries, labour, non-governmental organizations and individuals, forest dwellers and women, in the development, implementation and planning of national forest policies.

3a. National policies and strategies should provide a framework for increased efforts including the development and strengthening of institutions and programmes for the management, conservation and sustainable development of forests and forest lands.

b. International institutional arrangements, building on those organizations and mechanisms already in existence, as appropriate, should facilitate international cooperation in the field of forests.

c. All aspects of environmental protection and social and economic development as they relate to forests and forest lands should be integrated and comprehensive.

4. The vital role of all types of forests in maintaining the ecological processes and balance at the local, national regional and global levels through, inter alia, their role in protecting fragile ecosystems, watersheds and freshwater resources and as rich storehouse of biodiversity and biological resources and sources of genetic material for biotechnology products, as well as photosynthesis, should be recognised.

5a. National forest policies should recognize and duly support the identity, culture and the rights of indigenous people, their communities and other communities and forest dwellers. Appropriate conditions should be promoted for these groups to enable them to have an economic stake in forest use, perform economic activities, and achieve and maintain cultural identity and social organization, as well as adequate levels of livelihood and well-being, through *inter alia*, those land tenure arrangements which serve as incentives for the sustainable management of forests.

b. The full participation of women in all aspects of the management, conservation and sustainable development of forests should be actively promoted.

6a. All types of forests play an important role in meeting energy requirements through the provision of a renewable source of bioenergy, particularly in developing countries, and the demands for fuelwood for household and industrial needs should be met through sustainable forest management, afforestation and reforestation. To this end, the potential contribution of planations of both indigenous and introduced species for the provision of both fuel and industrial wood should be recognised.

b. National policies and programmes should take into account the relationship, where it exists, between the conservation, management and sustainable development of forests and all aspects related to the production, consumption, recycling and/or final disposal of forests products.

c. Decisions taken on the management, conservation and sustainable development of forest resources should benefit, to the extent practicable, from a comprehensive assessment of economic and non-economic values of forest goods and services and of the environmental costs and benefits. The development and improvement of methodologies for such evaluations should be promoted.

d. The role of planted forests and permanent agricultural crops as sustainable and environmental sound sources of revewable energy and industrial raw material should be recognized, enhanced and promoted. Their contribution to the maintenance of ecological processes, to offsetting pressure on primary/old-growth forest and to providing regional employment and development with the adequate involvement of local inhabitants should be recognized and enhanced.

e. Natural forests also constitute a source of goods and services and their conservation, sustainable management and use should be promoted.

7a. Forests should be made to promote a supportive international economic climate conducive to sustainable and environmentally sound development of forests in all countries, which include, *inter alia*, the promotion of sustainable patterns of production and consumption, the eradication of poverty and the promotion of food security.

b. Specific financial resources should be provided to development countries with significant forest areas which establish programmes for the conservation of forests including protected natural forest areas. These resources should be directed notably to economic sectors which would stimulate economic and social substitution activities.

8a. Efforts should be undertaken towards the greening of the world. All countries, notably developed countries, should take positive and transparent action towards reforestation, afforestation and forest conservation, as appropriate.

b. Efforts to maintain and increase forest cover and forest productivity should be undertaken in ecologically, economically and socially sound ways through the rehabilitation, reforestation and re-establishment of trees and forests on unproductive, degraded and deforested lands, as well as through the management of existing forest resources.

c. The implementation of national policies and programmes aimed at forest management, conservation and sustainable development, particularly in developing countries, should be supported by international financial and technical cooperative, including through the private section, where appropriate.

d. Sustainable forest management and use should be carried out in accordance with national development policies and priorities and on the basis of environmentally sound national guidelines. In the formulation of such guidelines, account should be taken, as appropriate and if applicable, of relevant internationally agreed methodologies and criteria.

e. Forest management should be integrated with management of adjacent areas so as to maintain ecological balance and sustainable productivity.

f. National policies and/or legislation aimed at management, conservation and sustainable development of forests should include the protection of ecologically viable representative or unique examples of forests, including primary/old growth forests, cultural, spiritual, historical, religious and other unique and valued forests of national importance.

g. Access to biological resources, including genetic material, shall be with due regard to the sovereign rights of the countries where the forests are located and to the sharing on mutually agreed terms of technology and profits from biotechnology products that are derived from these resources.

h. National policies should ensure that environmental impact assessments should be carried out where actions are likely to have significant adverse impacts on important forest resources, and where such actions are subject to a decision of a competent national authority.

9a. The efforts of developing countries to strengthen the management, conservation and sustainable development of their forest resources should be supported by the international community, taking into account the importance of redressing external indebtedness, particularly where aggravated by the net transfer of resources to developed countries, as well as the problem of achieving at least the replacement value of forests through improved market access for forest products, especially processed products. In this respect, special attention should also be given to the countries undergoing the process of transition to market economies.

b. The problems that hinder efforts to attain the conservation and sustainable use of forest resources and that stem from the lack of alternative options available to local communities, in particular the urban poor and poor rural populations who are economically and socially dependent on forests and forest resources, should be addressed by Governments and the inernational community.

c. National policy formulation with respect to all types of forests should take account of the pressures and demands imposed on forest ecosystems and resources from influencing factors outside the forest sector, and intersectoral means of dealing with these pressures and demands should be sought.

10. New and additional financial resources should be provided to developing countries to enable them to sustainably manage, conserve and develop their forest resources, including through afforestation, reforestation and combating deforestatiosn and forest and land degradation.

11. In order to enable, in particular, developing countries to enhance their endogenous capacity and to better manage, conserve and develop their forest resources, the access to and transfer of environmentally sound technologies and corresponding knowhow on favourably terms, including on concessional and preferential terms, as mutually agreed, in accordance with the relevant provisions of Agenda 21, should be promoted, facilitated and financed, as appropriate.

12a. Scientific research, forest inventories for assessments carried out by national institutions which take into account, where relevant biological, physical, social and economic variables, as well as technological development and its application in the field of sustainable forest management, conservation and development should be strengthened through effective modalities, including international cooperation. In this context, attention should also be given to research and development of sustainably harvested non-wood products.

b. National and, where appropriate, regional and international institutional capabilities in education, training, science, technology, economics, anthropology and social aspects of forests and forest management are essential to the conservation and sustainable development of forests and should be strengthened.

c. International exchange of information on the results of forest and forest management research and development should be enhanced and broadened, as appropriate, making full use of education and training institutions including those in the private sector.

d. Appropriate indigenous capacity and local knowledge regarding the conservation and sustainable development of forests should, through institutional and financial support, and in collaboration with the people in local communities concerned, be recognized, respected, recorded, developed and, as appropriate, introduced in the implementation of programmes. Benefits arising from the utilization of indigenous knowledge should, therefore, be equitably shared with such people.

13a. Trade in forest products should be based on non-discriminatory and multilaterally agreed rules and procedures consistent with international trade law and practices. In this context, open and free international trade in forest products should be facilitated.

b. Reduction or removal of tariff barriers and impediments to the provision of better market access and better prices for higher value-added forest products and their local-processing should be encouraged to enable producer countries to better conserve and manage their renewable forest resources.

c. Incorporation of environmental costs and benefits into market forces and mechanisms, in order to achieve forest conservation and sustainable development, should be encouraged both domestically and internationally.

d. Forest conservation and sustainable development policies should be integrated with economic, trade and other relevant policies.

e. Fiscal, trade, industrial, transportation and other policies and practices that they may lead to forest degradation should be avoided. Adequate policies, aimed at management, conservation and sustainable development of forests, including where appropriate, incentives, should be envisaged.

14. Unilateral measures, incompatible with international obligations or agreements, to restrict and/or ban international trade in timber

or other forest products should be removed or avoided, in order to attain long-term sustainable forest management.

15. Pollutants, particularly air-borne pollutants, including those responsible for acidic deposition, that are harmful to the health of forest ecosystems at the local, national, regional and global levels should be controlled.

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